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ASD ltr dtd 17 Apr 1974

See 1423

UH-1N
CATEGORY II FLYING QUALITIES EVALUATION

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SUBSTANTIATING DOCUMENT No. 71-50

JANUARY 1972

AIR FORCE FLIGHT TEST CENTER
EDWARDS AIR FORCE BASE, CALIFORNIA
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE

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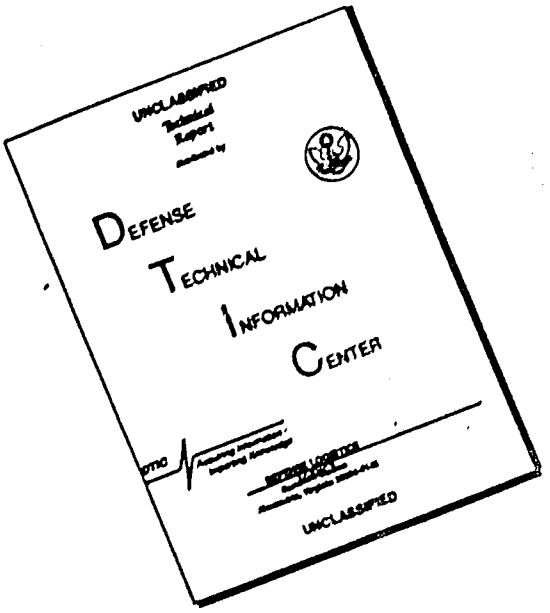

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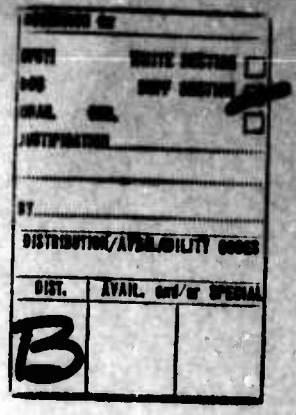

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION (AFSC)

WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

REPLY TO ATTN OF ASD/SDQH 4-51 (Maj Thompson/54921/cal/UH-1N/R&D 13-2-3)

SUBJECT FTC-SD-71-50; UH-1N Category II Flying Qualities Evaluation

TO Recipients of Subject Report

ASD has reviewed subject report incident to distribution. The following ASD comments should remain attached to the basic report.

a. In order to be in agreement with the notes at the top of Pages 7 and 8, the throw of the lateral and directional control should be corrected in the graphs.

b. Longitudinal control input on Pages 107, 109, 110, 112, 113, 115 and 116 should read FWD and AFT instead of RT and LFT.

c. Detailed test conditions in the SD report are generally more complete and more accurate than the TR. Specific notes apply to the TR Tables of Test Conditions as follows:

1. Gross weight in the SD are more accurate than Table III of the TR.

2. The gross weight on Page 83 of the SD should be corrected to read 10,225.

3. The SD presents typical representative plots which do not cover all the conditions mentioned in TR Tables VI, VII, and VIII.

4. The SD did not include the 6th and 7th conditions noted in TR Table IX. Conditions in Table IX include those for low speed control position trim curves in the SD report.

FOR THE COMMANDER

William D Eastman Jr

WILLIAM D. EASTMAN, JR., Lt Col, USAF
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FTC-SD-71-50

UH-1N
CATEGORY II FLYING QUALITIES EVALUATION

TIMOTHY P. NASAL
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FOREWORD

This report contains quantitative data to substantiate the conclusions and recommendations made in FTC-TR-71-50, UH-1N Category II Flying Qualities Evaluation (reference 1). The tests were conducted at the Air Force Flight Test Center, Edwards Air Force Base, California, and at test sites near Bishop, California, between 18 March and 29 September 1971, under the authority of AFFTC Project Directive 69-49B, 5 October 1970.

The authors of this report wish to express their appreciation to Sergeant W. Thomas Geary for his efforts in the preparation of this report.

Foreign announcement and dissemination by the Defense Documentation Center are not authorized because of technology restrictions of the U.S. Export Control Acts as implemented by AFR 400-10.

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Reviewed and approved by:
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Commander

ABSTRACT

This report contains the test data and test techniques used in arriving at the conclusions and recommendations reported in AFFTC Technical Report FTC-TR-71-50, UH-1N Category II Flying Qualities Evaluation, November 1971.

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list of illustrations

APPENDIX I

list of abbreviations and symbols

Item	Definition
acft	aircraft
BHC	Bell Helicopter Company
cg	center of gravity (in.)
H_p	pressure altitude (ft)
IGE	in ground effect
KCAS	knots calibrated airspeed (kt)
N_R	main rotor speed (rpm)
OAT	outside air temperature (ambient) (deg C)
OGE	out of ground effect
T_a	ambient temperature (deg C)
β	sideslip angle (deg)
$\Delta\beta$	change in sideslip angle (deg)
Δp	change in tail rotor pedal position (in.)
Δsa	change in pilot's lateral control stick position (in.)
Δse	change in pilot's longitudinal control stick position (in.)

INTRODUCTION

The basic airframe of the UH-1N was a UH-1D fuselage with a modified nose section and alterations to accommodate a twin-engine power package. Both main rotor and tail rotor blades were modified from the standard configuration, and the tail rotor was a tractor rotor, rather than the more conventional pusher rotor. The flight tests were conducted to evaluate the flying qualities at various conditions representative of the operational flight envelope.

TEST AND EVALUATION

GENERAL

In this report, outside air temperature (OAT) is equal to ambient temperature (T_a). Unless otherwise noted, the lateral center of gravity location for these tests was on the aircraft centerline.

CONTROL SYSTEM MECHANICAL CHARACTERISTICS

Ground tests were conducted to determine the force-versus-position characteristics of the artificial feel system of the cockpit flight controls. The longitudinal cyclic force, lateral cyclic force, and collective stick force were recorded on the oscillograph; directional control force was recorded using a hand-held force gauge because the directional control tube strain gauges delaminated.

Because they were affected when the rotors were turning, directional and collective force-versus-position characteristics were determined with the rotors turning and with the rotors stationary. Longitudinal and lateral cyclic force-versus-position characteristics were not influenced by rotor motion, and are therefore presented only for the rotors stationary condition. Control positions and where possible, control forces, were obtained from the oscillograph outputs. Forces were then correlated with data obtained using a calibrated hand-held force gauge. The results of the control system force-versus-position tests are presented in figures 1 through 6.

LONGITUDINAL SPEED STABILITY

Tests were conducted to determine the apparent longitudinal speed stability characteristics of the helicopter, as evidenced by the variation of longitudinal cyclic position with changes in airspeed while at a constant power setting. The aircraft was stabilized at the desired test conditions, and airspeed was varied about the trim value using longitudinal cyclic control only. The aircraft was maintained in wings level, zero sideslip flight, and the collective pitch control was held at its trim position. Data were recorded at stabilized speeds above and below the trim airspeed. For the climb, powered descent and autorotation test conditions, the values presented for pressure altitude (H_p) and outside air temperature (OAT) are the average values obtained during the test. The longitudinal speed stability of the UH-1N aircraft was affected by power required, store loadings, and center of gravity location. The most significant effect was due to changes in power required.

Any conditions which required more power required more forward and right cyclic and more left pedal. The power required increased with an increase in altitude, the addition of external armament, an increase in airspeed, or a change in flight condition (such as a climb). All of these conditions were investigated during theses tests.

The slope of longitudinal stick position versus airspeed did not change with a change in power, however, the slopes of pedal position and lateral cyclic position versus airspeed were reduced during climb and remained unchanged during level flight, powered descent, and autorotation.

The addition of external armament required more forward and right cyclic, and more left pedal due to the increase in power required. The addition of armament reduced the slope of longitudinal stick position versus airspeed under all conditions, and reduced the slope of pedal position versus airspeed during level flight, power descent, and autorotation. The effect of armament on the slope of lateral cyclic position versus airspeed under all conditions, and on the slope of pedal position versus airspeed during climb was negligible.

In all cases, the movement of the center of gravity from forward to aft reduced the slope of the control position versus airspeed curve.

Pitch attitude data are not presented because of an instrumentation malfunction. Results of the longitudinal speed stability tests are presented in figures 7 through 34.

STATIC LATERAL-DIRECTIONAL STABILITY

Tests were conducted to determine the apparent static directional stability, as evidenced by variations in pedal position with changing sideslip angle; and apparent dihedral effect, as evidenced by variations in lateral cyclic control position with changes in sideslip angle. The aircraft was trimmed in wings level, zero sideslip flight. Sideslip angle was then increased until the Flight Manual limits were reached, until there was insufficient control authority available to increase sideslip angle, or until the aircraft motion dictated a reduction in sideslip angle. The collective pitch control was held fixed in its trim position during these tests, and longitudinal cyclic control was used as necessary to maintain the trim airspeed. Average values of H_p and OAT are presented for the climb, powered descent and autorotation trim conditions. Summary plots of changes in control position per change in sideslip angle were derived separately for left and right sideslips. The slopes of control positions versus sideslip angle were determined (independently) for left and right sideslips in the range from zero to 20 degrees sideslip angle and are presented in figures 35 and 36 as change in control position per degree of change in sideslip angle versus calibrated airspeed for several contrasting conditions.

For left sideslips an increase in altitude resulted in more right pedal, left lateral cyclic stick, and forward longitudinal cyclic stick displacement per degree change in sideslip angle than was evidenced at low altitude. Shifting the center of gravity from forward to aft generally resulted in the same variation as noted with altitude changes. At an aft center of gravity, addition of armament resulted in less right pedal displacement, less left lateral stick displacement and more forward longitudinal stick displacement per degree change in sideslip angle than was required in the clean configuration. The effect of armament on pedal position changes were reversed from those noted above for the forward center of gravity loading.

For right sideslips, an increase in altitude produced a negligible change in pedal displacement and increases in right lateral and forward longitudinal stick displacement per unit change in sideslip angle. An aft center of gravity produced increases in left pedal and right lateral cyclic stick displacement per unit change in sideslip angle. The value of longitudinal cyclic stick displacement per unit change in sideslip angle

was lower at an aft cg at airspeeds from 50 to 60 knots calibrated airspeed (KCAS), but higher for airspeeds from 60 to 100 KCAS than at a forward cg loading. The value of longitudinal stick displacement per unit change in sideslip angle was negative above 65 KCAS; positive elsewhere. At an aft cg, the addition of armament resulted in less pedal and lateral cyclic stick displacement per unit change in sideslip angle, and affected the longitudinal characteristics in much the same manner as noted above for an aft cg. As was the case for left sideslips, the effect on pedal displacement of adding armament while at a forward center of gravity loading was reversed from the effect noted at an aft center of gravity loading.

The results of the static directional stability tests are presented in figures 35 through 82. A divergent, but readily controllable, mode of response was noted during flight at large sideslip angles. A time history of this divergence in pitch and yaw is presented in figure 83.

LONGITUDINAL DYNAMIC STABILITY

Tests were conducted to evaluate the long period dynamic stability (phugoid response) characteristics of the aircraft. The aircraft was stabilized at the desired flight conditions, and airspeed was slowly reduced to a value 10 knots below the trim airspeed. The longitudinal cyclic was then quickly and smoothly returned to and held at the trim position; precise control return to the trim position being assured through use of a control fixture. Lateral and directional oscillations were kept to a minimum while the aircraft responded, and the collective pitch control was held in at trim position during the response. Average values of H_p, OAT and rotor speed (N_R) are presented for the climb, powered descent, and autorotation trim conditions. For the level flight tests, trim condition values are presented for H_p, OAT, and N_R. Time histories of the longitudinal dynamic stability tests are presented in figures 84 through 93.

CONTROL POWER

Aircraft responses to rapid step-type control inputs were determined for a number of flight conditions within the flight envelope. With the aircraft stabilized at the desired trim conditions, step control inputs of varying magnitude were made using a control fixture. Responses about axes other than the axis of interest were kept to a minimum by the pilot. The control input was held until aircraft motion stabilized or until corrective action was deemed necessary by the pilot. Intermediate plots were made of control input magnitude (in inches) versus changes in attitude, rate, and acceleration about the axis of interest. Changes in attitude for the longitudinal and directional control inputs were read one second after initiation of the input; for lateral inputs, attitudes were read 0.5 seconds after initiation of the control input. Rates and accelerations were measured at their maximum values for inputs about all three axes. These intermediate plots were faired, and the slopes of the fairings (straight-line fairings) were computed and plotted against calibrated airspeed. These summary plots of the control response characteristics are presented in figures 94 through 96. Typical aircraft responses to step control inputs during hovering and forward flight are presented in figures 97 through 108.

CONTROL REACTION TIME

Tests were conducted to determine response to abrupt moderate deviations from trim conditions. With the aircraft trimmed at the desired test conditions a rapid pulse-type control input of approximately one-inch magnitude and 0.5 seconds duration was made about the axis of interest. A control fixture was used to assure accurate control inputs, and all controls were held in their trim positions during the resulting motion. Time histories of aircraft responses to pulse control inputs are presented for a number of flight conditions in figures 109 through 173.

SLOW SPEED FLIGHT

Tests were conducted to determine control position trim curves and flying characteristics during slow speed flight in ground effect. The aircraft was stabilized in slow speed rearward flight at approximately 15 feet skid height by pacing a calibrated ground vehicle. Height above the ground was maintained by monitoring the radar altimeter. A ground wind station recorded wind velocity, and airspeed was determined through a vector addition of ground vehicle velocity and wind velocity. Control positions were recorded in stabilized flight at a number of test speeds. Figures 174 through 179 present the results of the slow speed forward and rearward flight control position trim curve tests. It should be noted that the curves for flight upwind differ from those flown downwind, even though the velocity vectors were adjusted to allow for the wind speed.

Sideward and rearward flight were also accomplished at approximately a 15-foot skid height paced by a calibrated ground vehicle. Test data were acquired at a number of airspeeds and relative wind azimuths varying from 90 degrees clockwise off the aircraft nose (right sideward flight) through 180 degrees (rearward flight) to 270 degrees (left sideward flight). Ambient wind velocites were again recorded by a ground wind station, and the data was corrected for ambient wind velocities above one knot through a vector addition of velocities. During these tests the aircraft was reballasted after each 200-pound increment of fuel was burned off in order to maintain a nearly constant thrust coefficient and nearly constant values of longitudinal and lateral cg location. Figures 180 through 206 present the results of the sideward and rearward flight tests. Figure 207 presents a time history of the high pilot workload experienced during an acceleration from a trim in hover at a 15-foot skid height to 30 knots rearward flight speed at the same skid height.

HOVER IN WINDS

Sideward and rearward flight tests have been used to simulate the flight task of hovering over a spot in ambient winds (as during rescue operations). As a part of an examination of the adequacy of the simulation, hover over a spot during moderate ambient winds was conducted at conditions designed to duplicate previous sideward and rearward flight tests conducted in calm wind conditions. The aircraft was stabilized in a hover at a 15-foot skid height over a point on the ground, and the control positions were recorded on the oscillograph while a ground station nearby recorded ambient wind velocity. The aircraft heading was varied in 10-degree increments until an entire compass swing was made. Figures 208 and 209 present the control position during hover in winds data.

APPENDIX I
Test Data

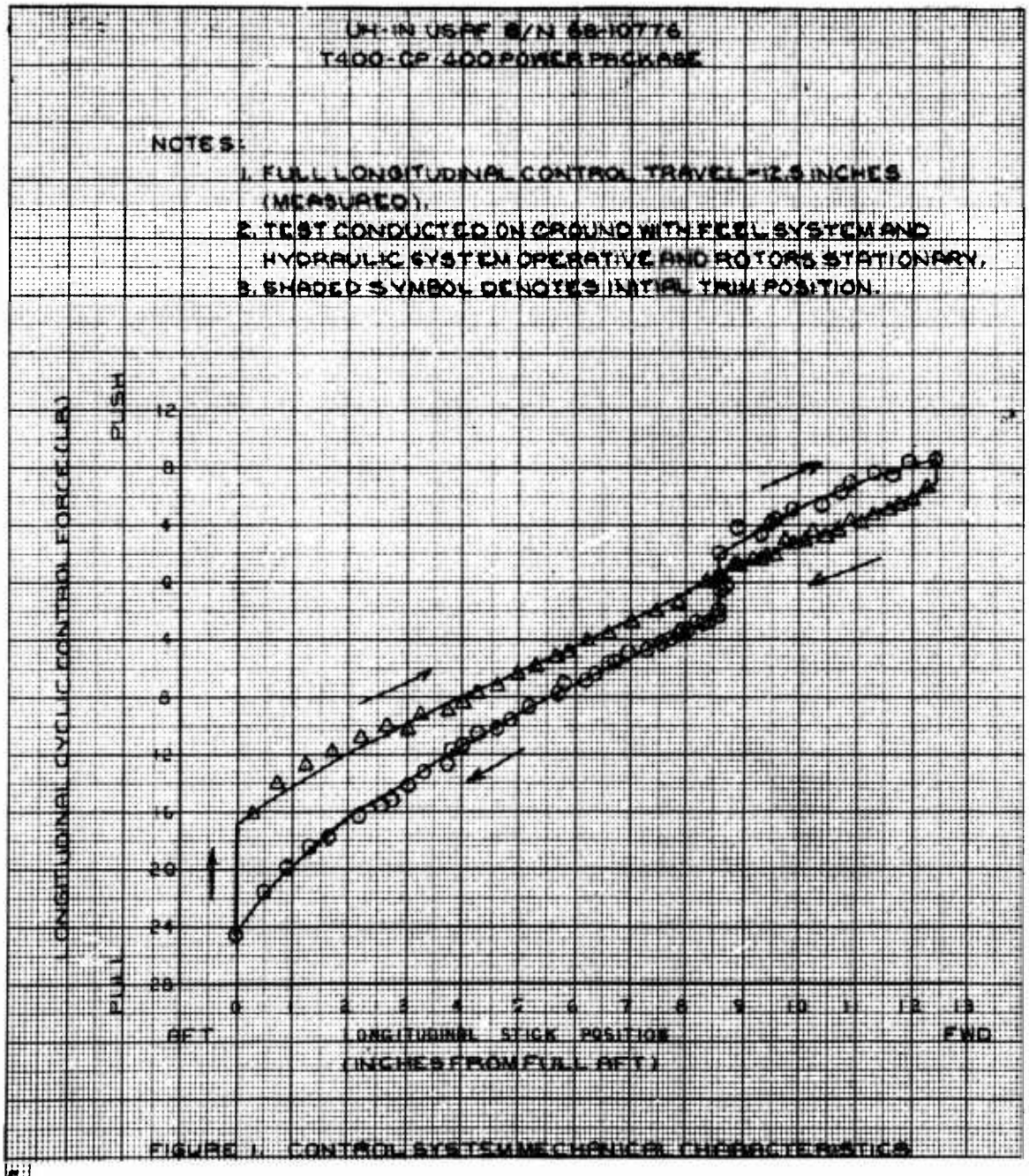


FIGURE 1. CONTROL SYSTEM MECHANICAL CHARACTERISTICS

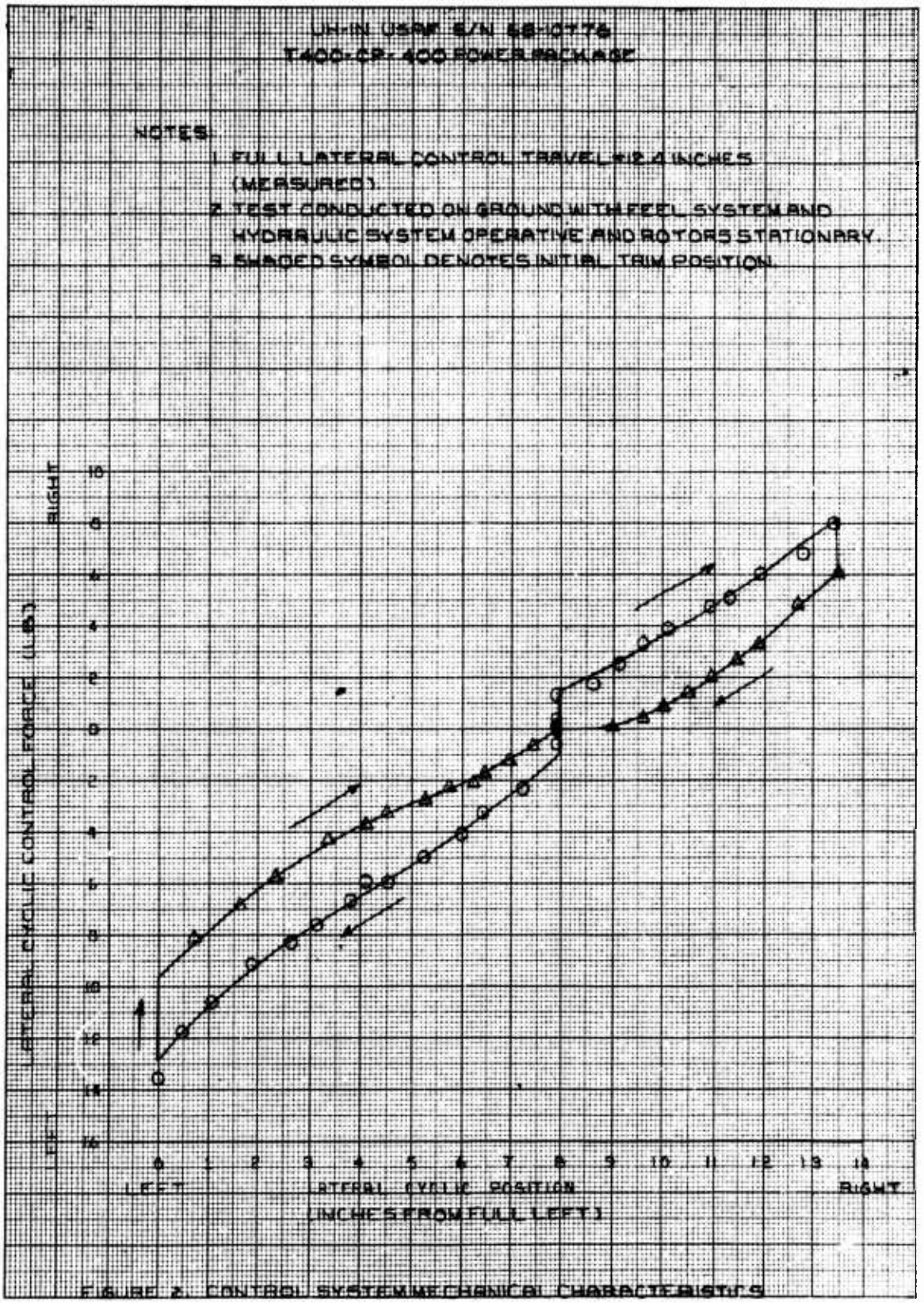


FIGURE 2. CONTROL SYSTEM MECHANICAL CHARACTERISTICS

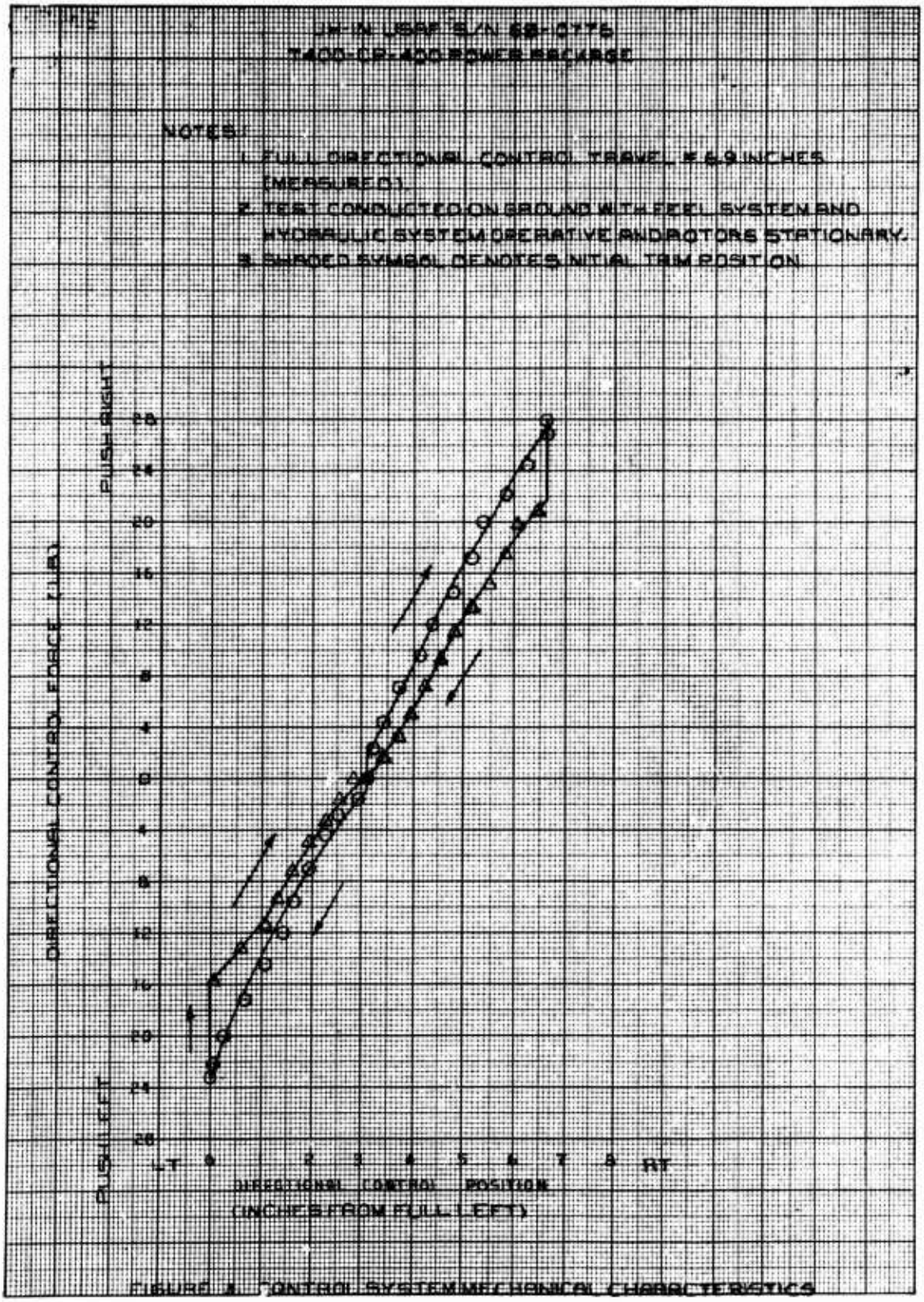


FIGURE 4. CONTROL SYSTEM MECHANICAL CHARACTERISTICS

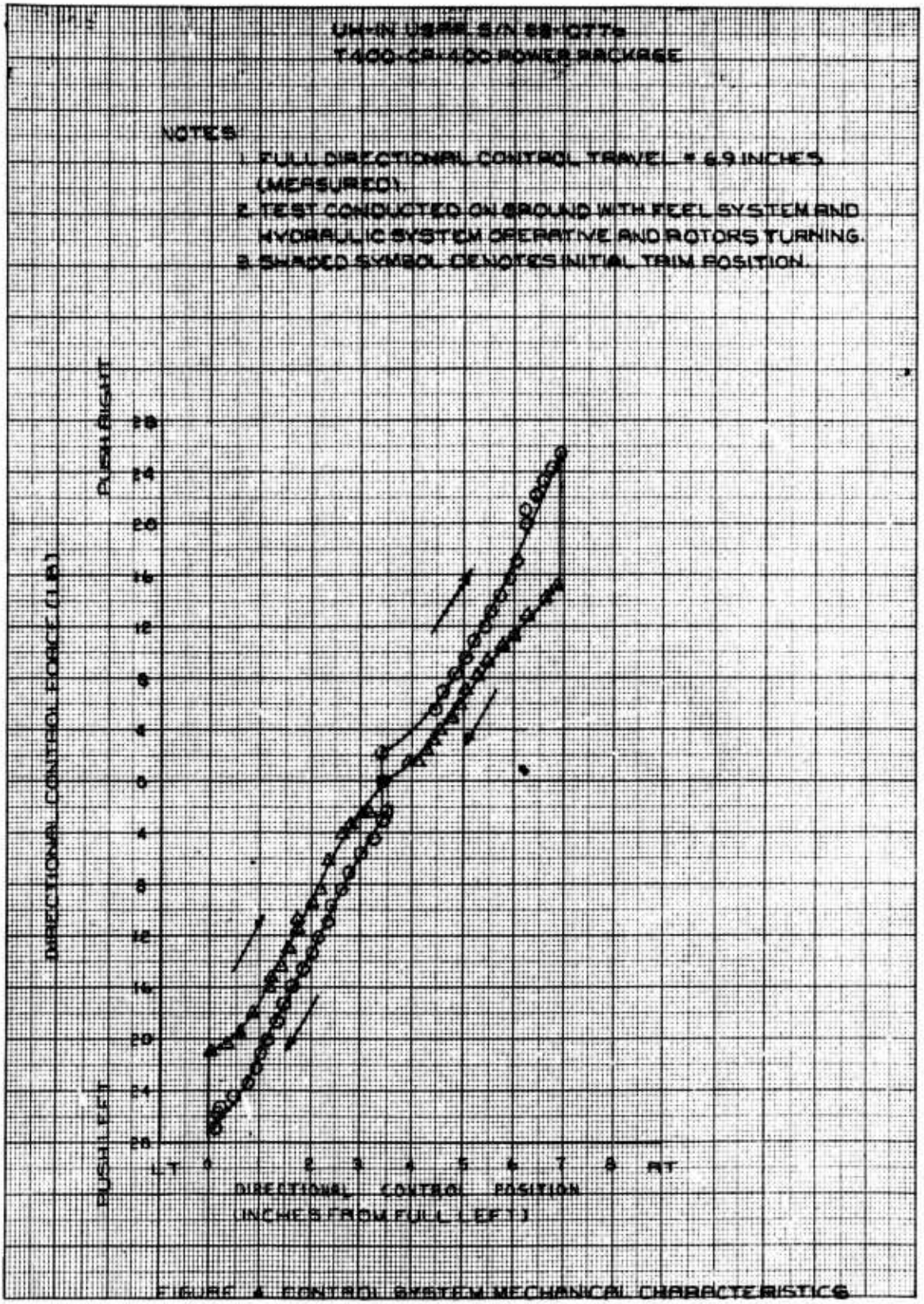


FIGURE 4. CONTROL SYSTEM MECHANICAL CHARACTERISTICS

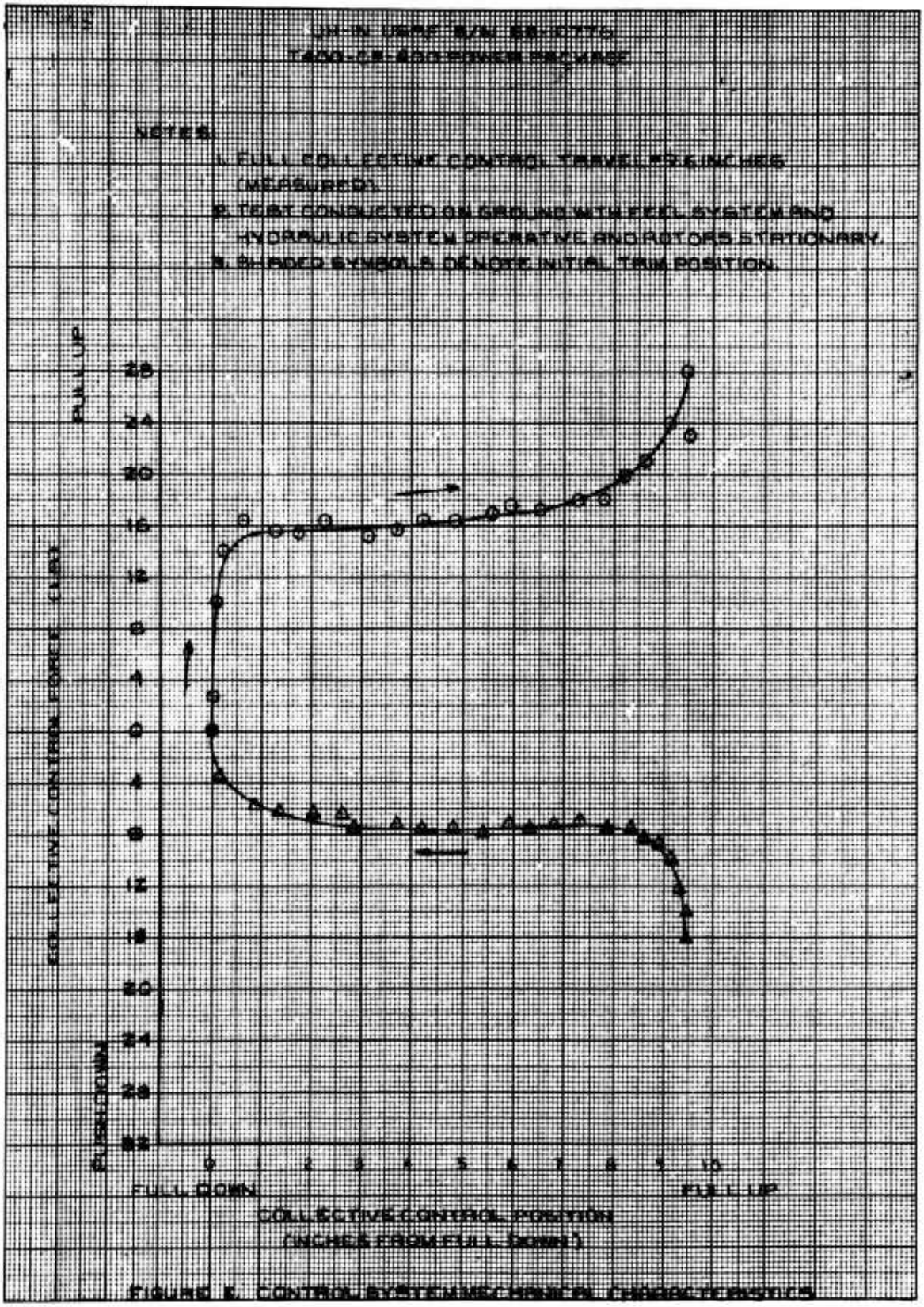


FIGURE 6. CONTROL SYSTEM MECHANICS, CHARACTERISTICS

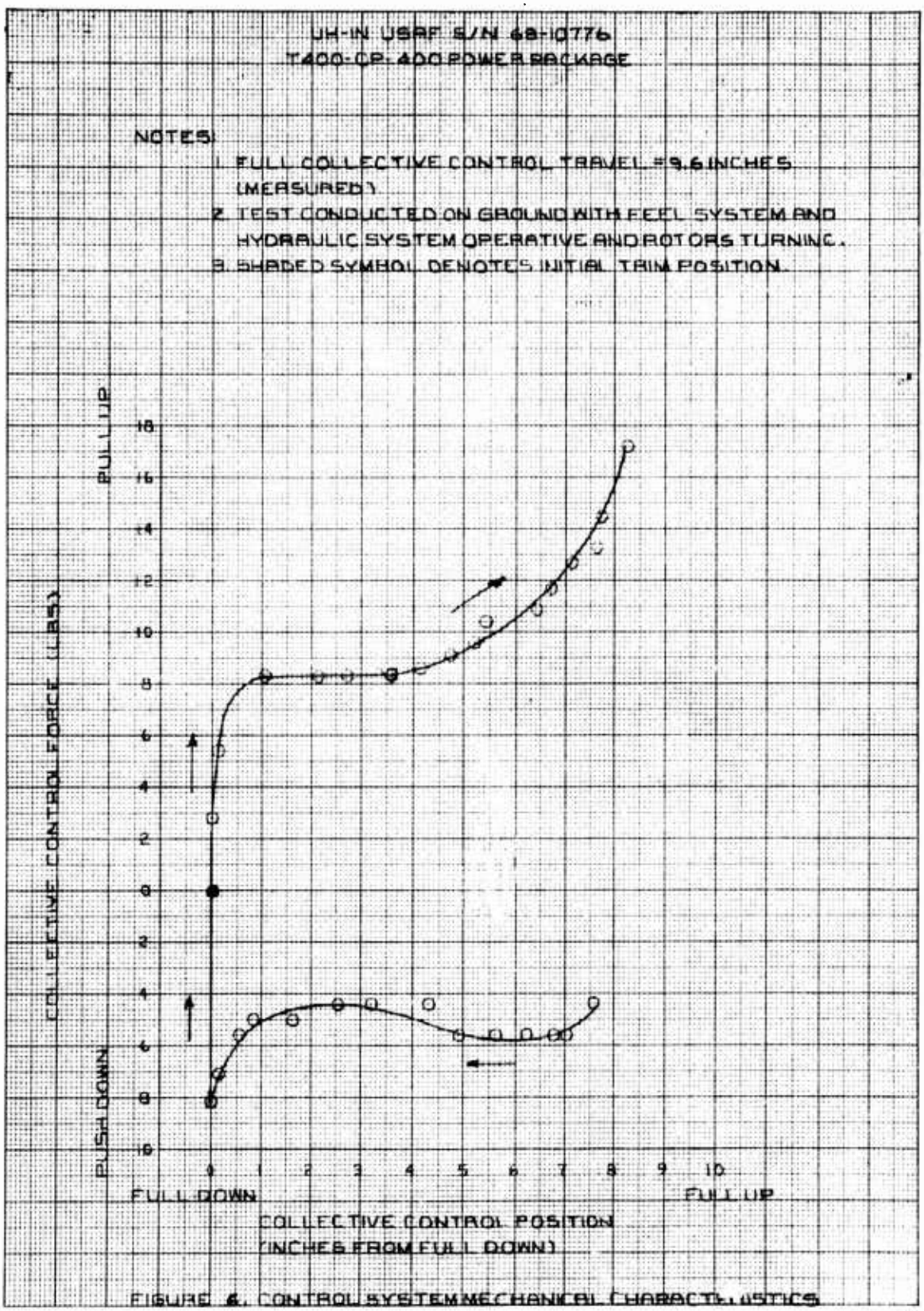


FIGURE 6. CONTROL SYSTEM MECHANICAL CHARACTERISTICS

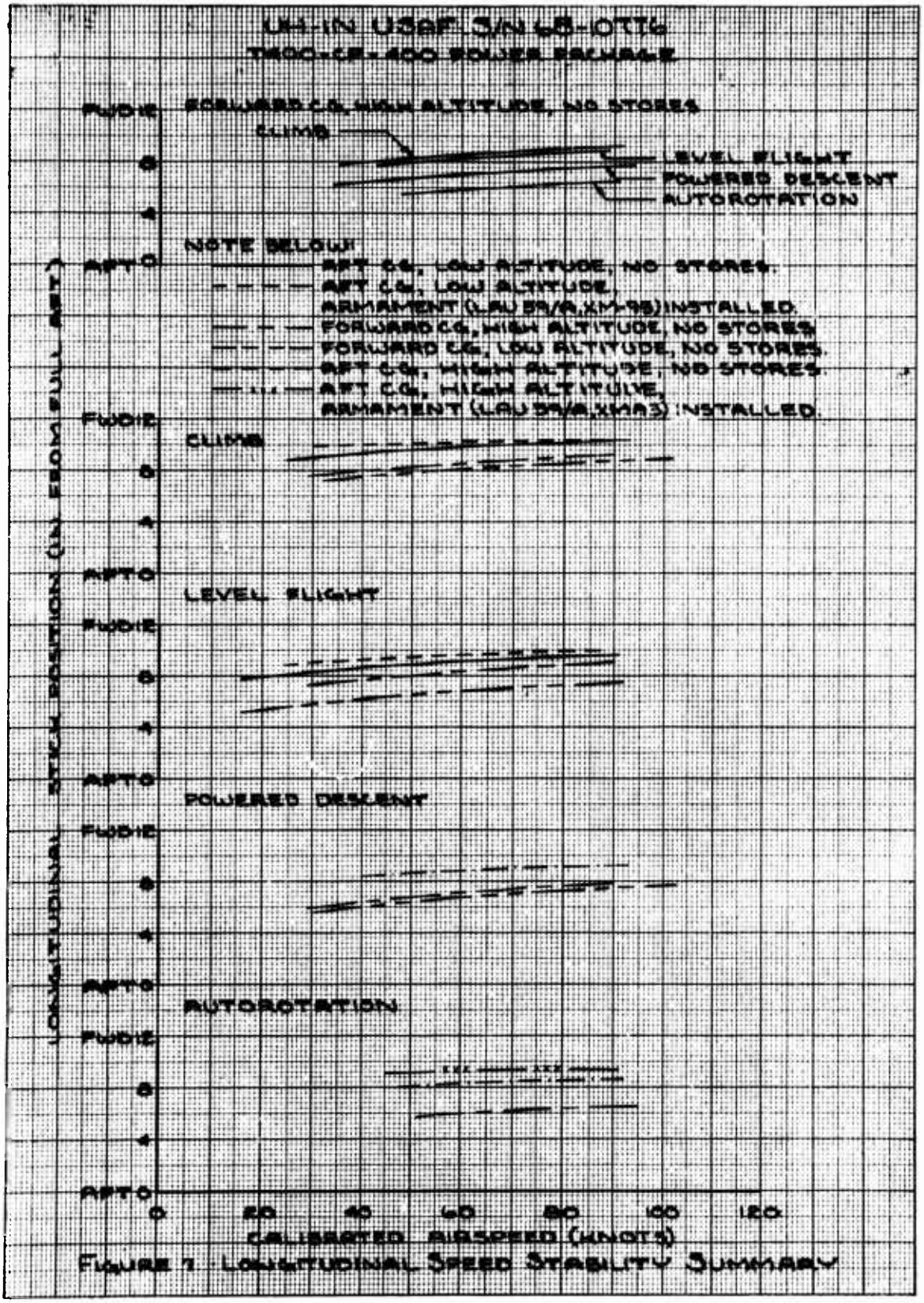


FIGURE 7. LONGITUDINAL SPEED STABILITY SUMMARY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: CLIMB

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG. C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9805	5250	14.0	132.1	313	5.4
△	10025	5340	13.0	132.6	312	5.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

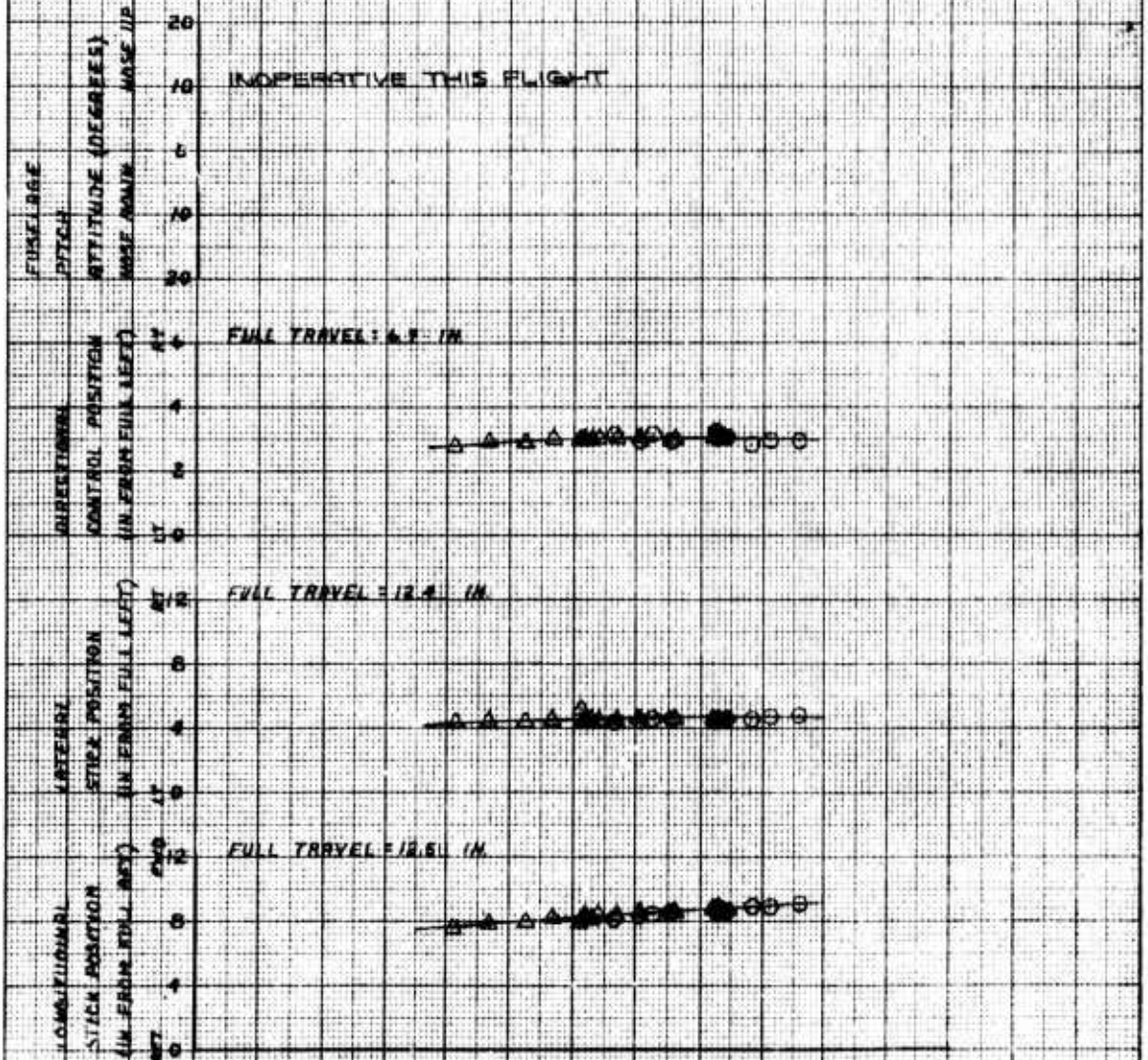


FIGURE 8. LONGITUDINAL SPEED STABILITY

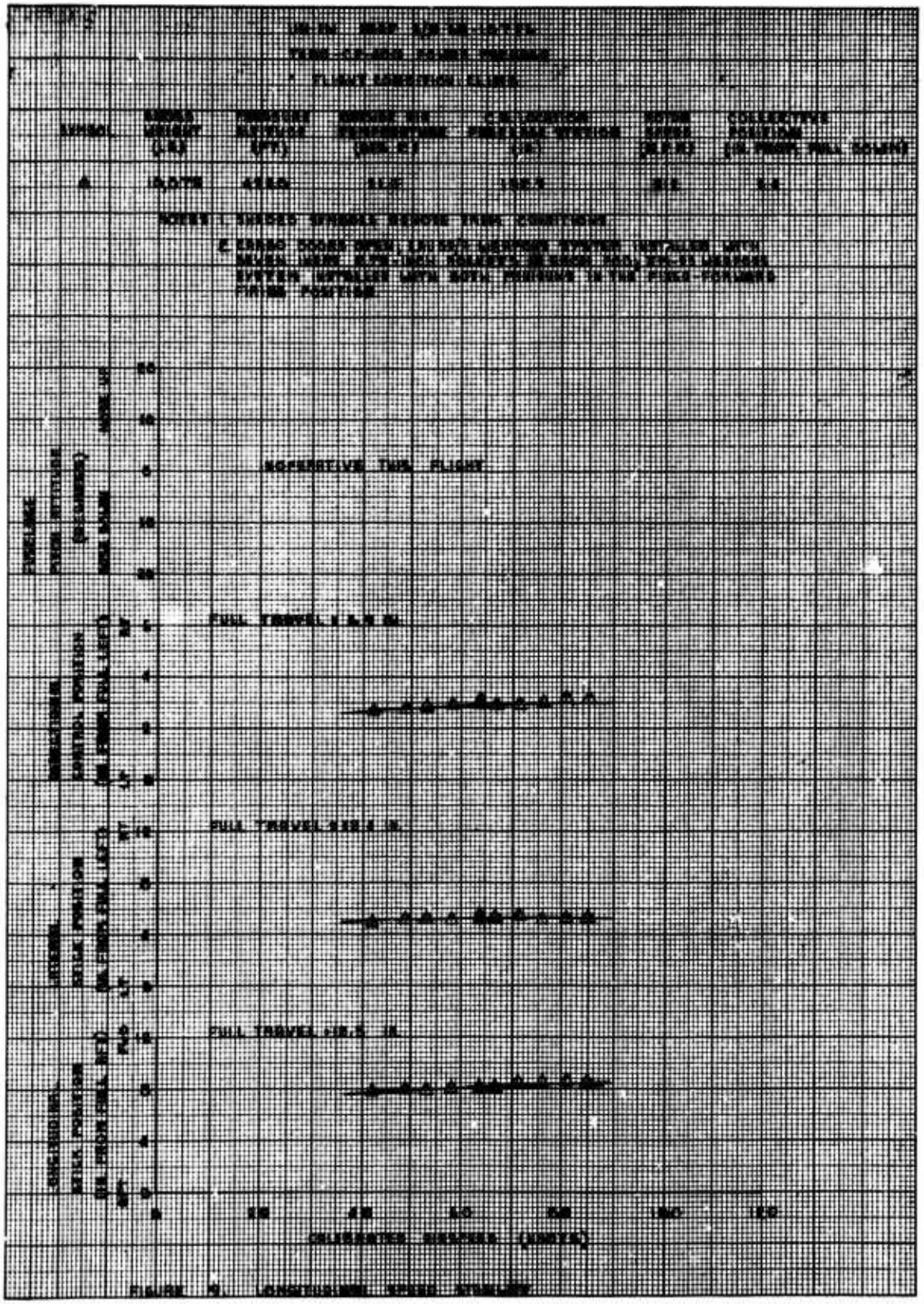


FIGURE 10. LONGITUDINAL STICK STABILITY

UH-1N USAF S/N 66-16778
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: CLIMB

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (deg C)	CG LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
△	9,300	4,190	18.0	139.4	312	8.5

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

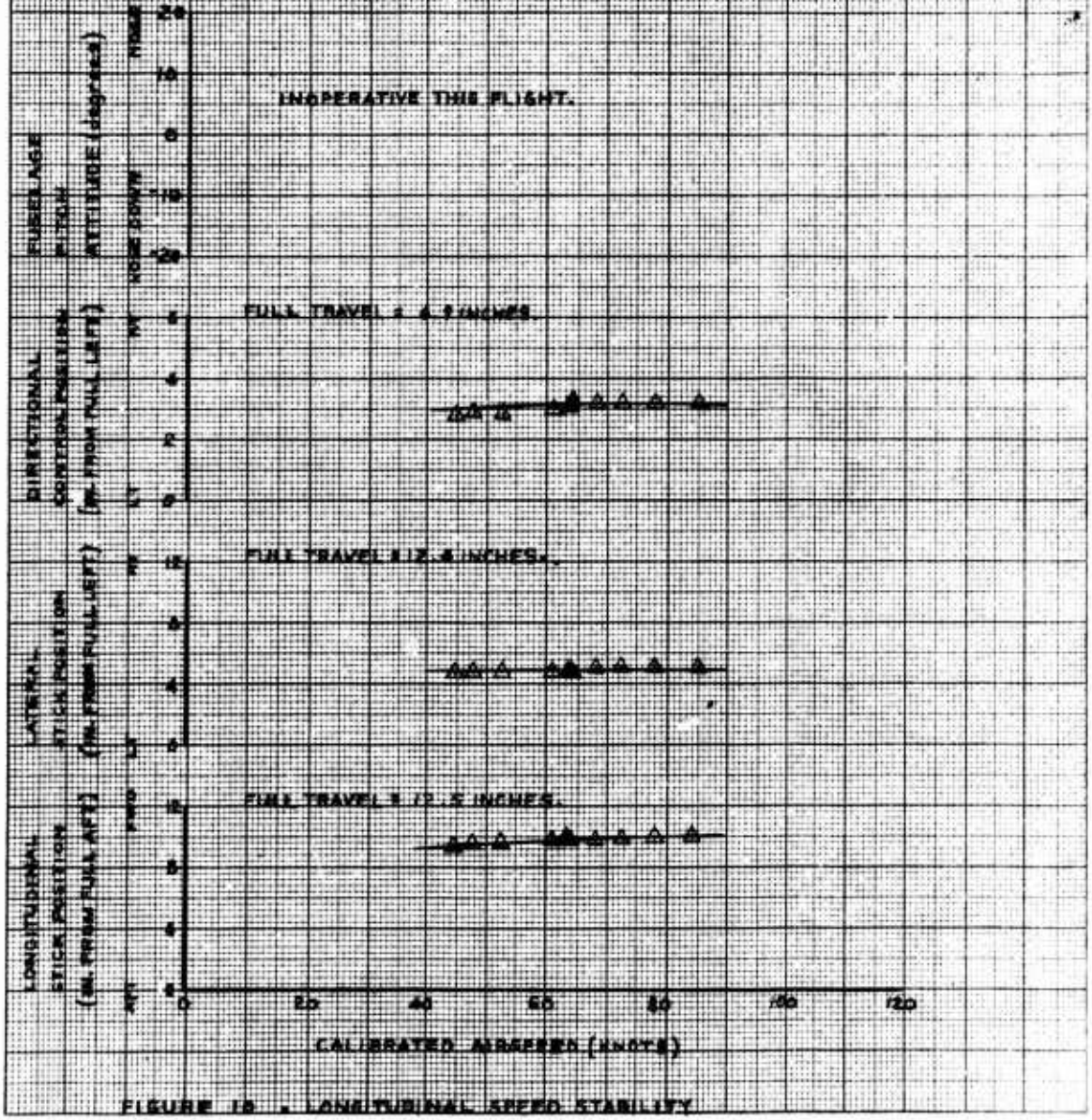


FIGURE 18 . LONGITUDINAL SPEED STABILITY

UH-1N USAF S/N 66-16775

TWO CF-700 ENGINES

FLIGHT CONDITION 640

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (°C)	C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN.) FROM FULL DOWN
A	9,890	9,850	4.5	191.9	312	5.8

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

INOPERATIVE THIS FLIGHT

FULL TRAVEL ±6.9 IN.

FULL TRAVEL ±12.4 IN.

FULL TRAVEL ±12.5 IN.

FIGURE 11. FLIGHT CONTROL SENSED SYSTEM

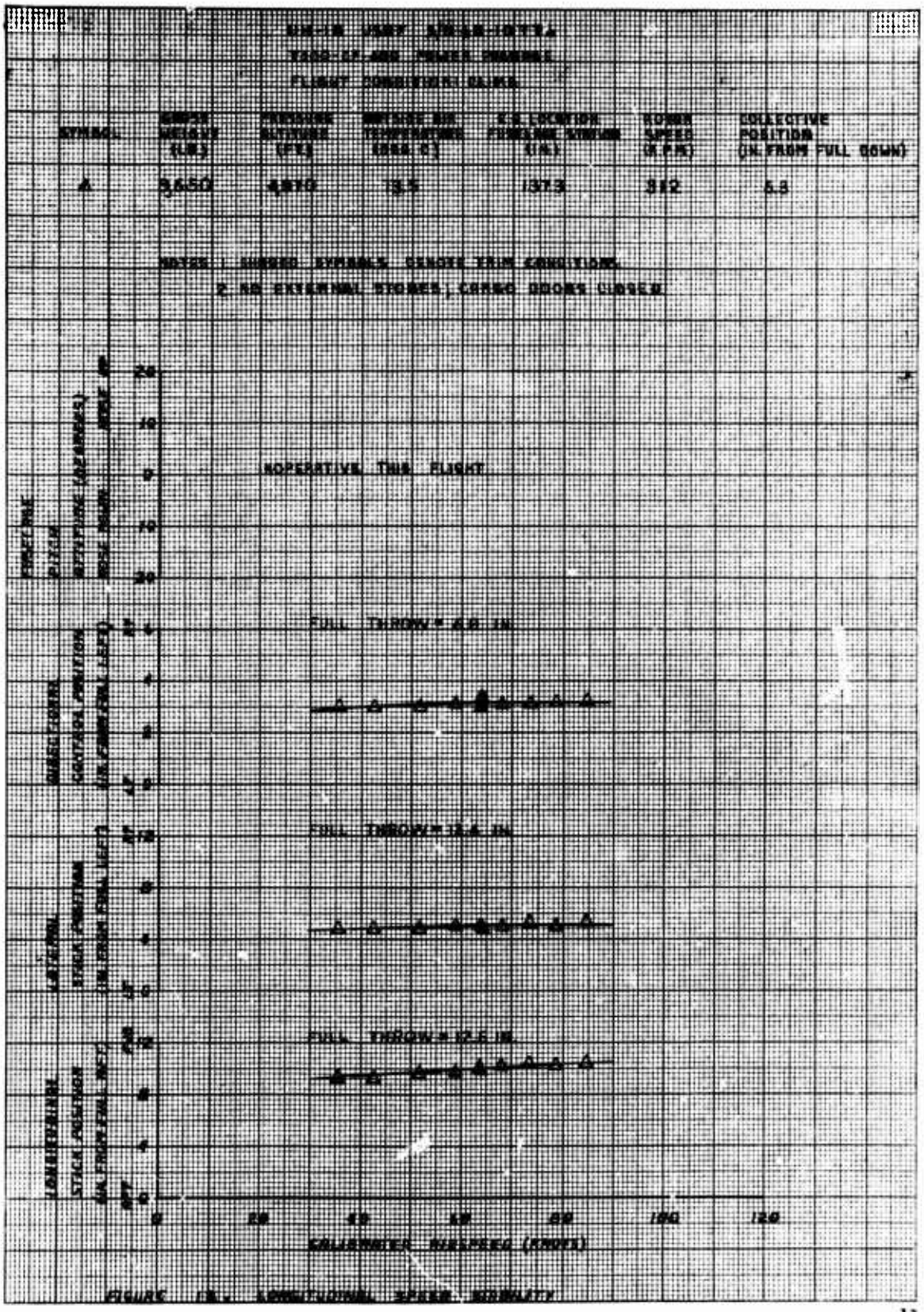


FIGURE (8). LONGITUDINAL SPEED STABILITY

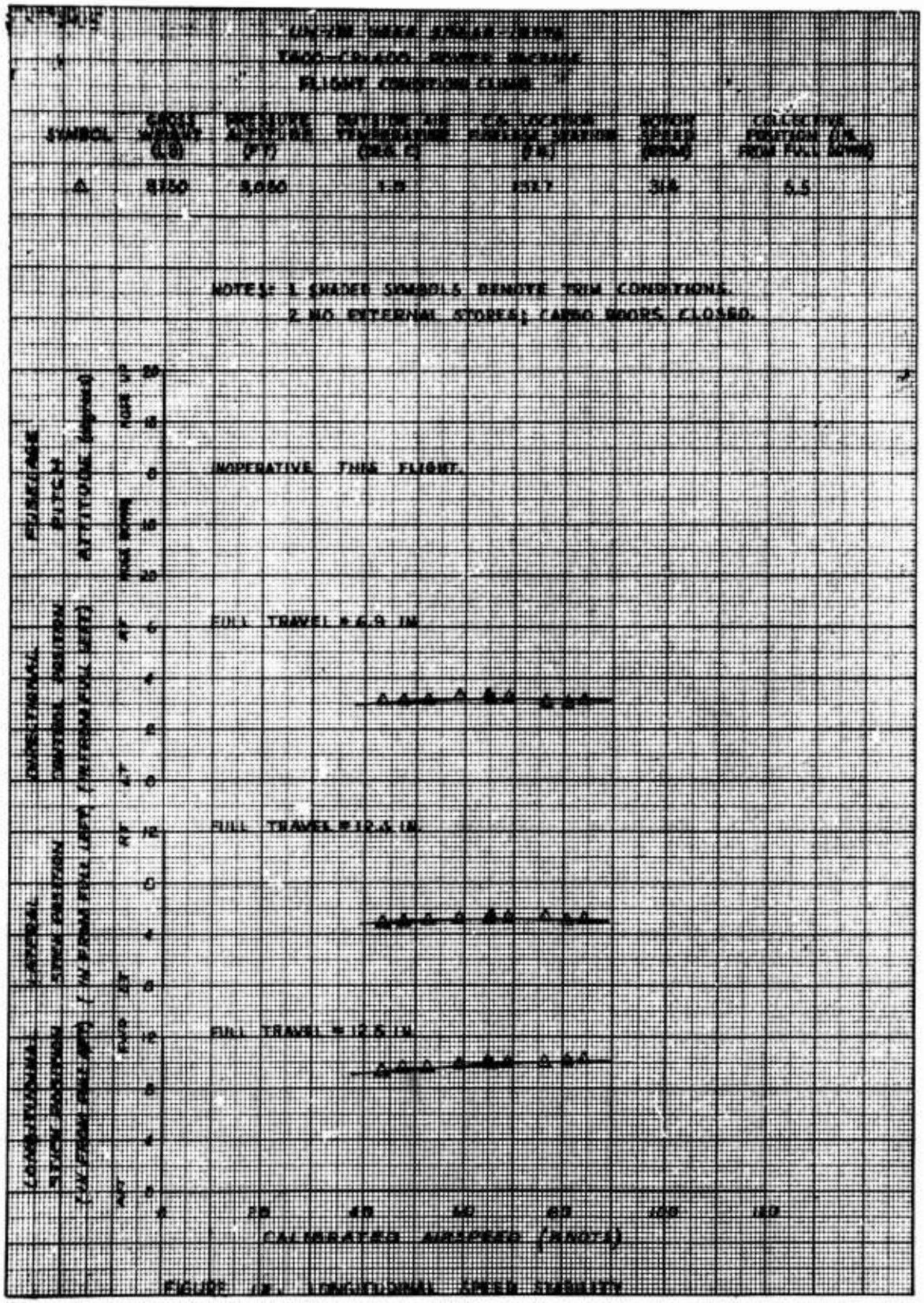


FIGURE 14. LONGITUDINAL AXIS STABILITY

UH-1N USAF S/N 68-10976
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION I CLIMB

SYMBOL	GROSS WEIGHT (lb)	PRESSURE ALTITUDE (Ft.)	OUTSIDE AIR TEMPERATURE (deg C)	CG LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (rpm)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	10,000	8,730	7.6	356.5	312	5.8

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

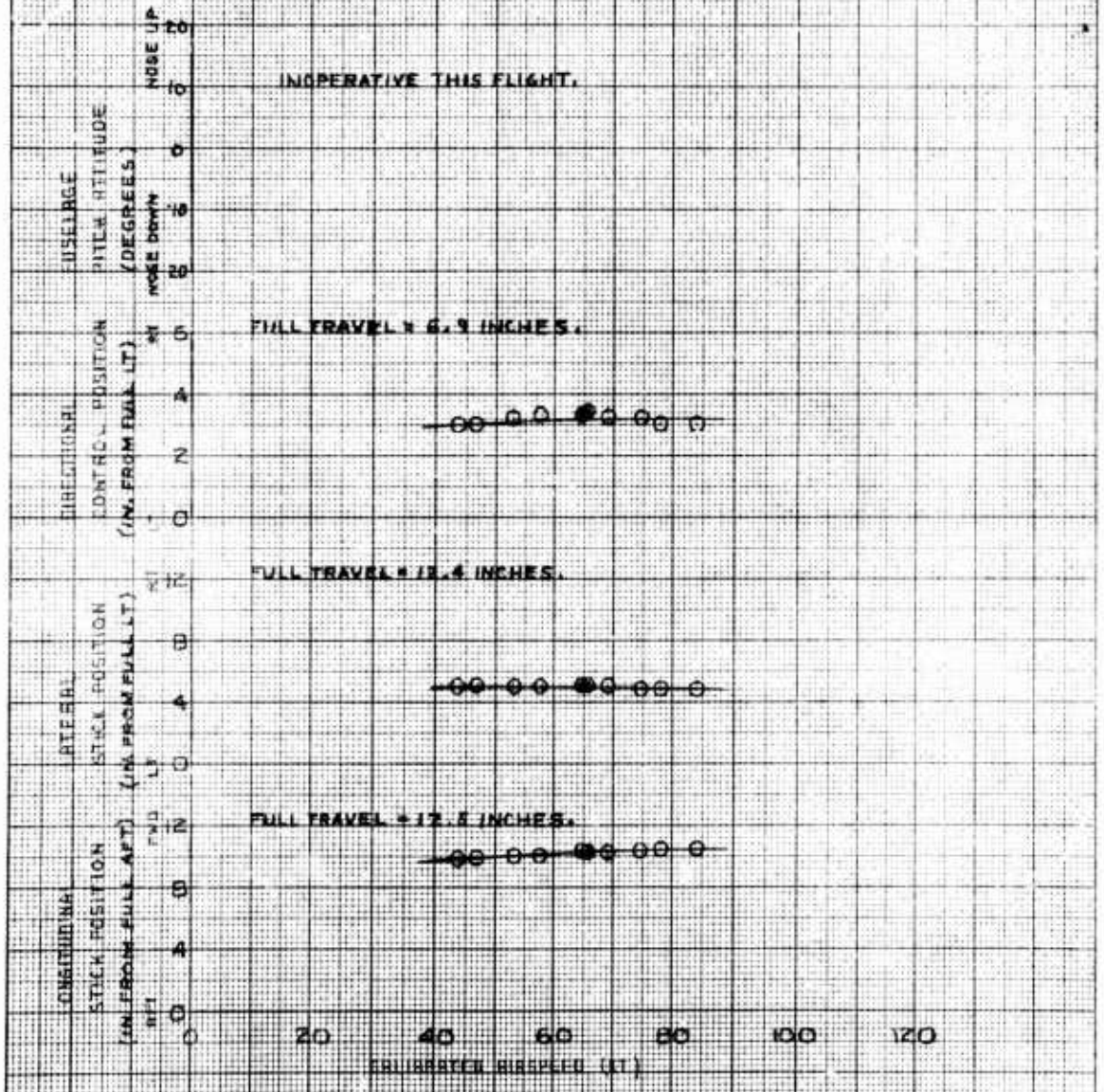


FIGURE 14. LONGITUDINAL SPEED STABILITY

XM-1N USAF S/N 63-7078
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: CLIMB

SYMBOL	GROSS WEIGHT (lb)	PRESSURE ALTITUDE (ft)	OUTSIDE AIR TEMPERATURE (deg C)	C.G. LOCATION FUSELAGE STATION (in.)	ROTOR SPEED (rpm)	COLLECTIVE POSITION (in. FROM FULL DOWN)
○	9,115	5,150	21.0	138.4	312	5.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. CARGO DOORS OPEN; (AH-1G/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-IN. ROCKETS IN EACH POD; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

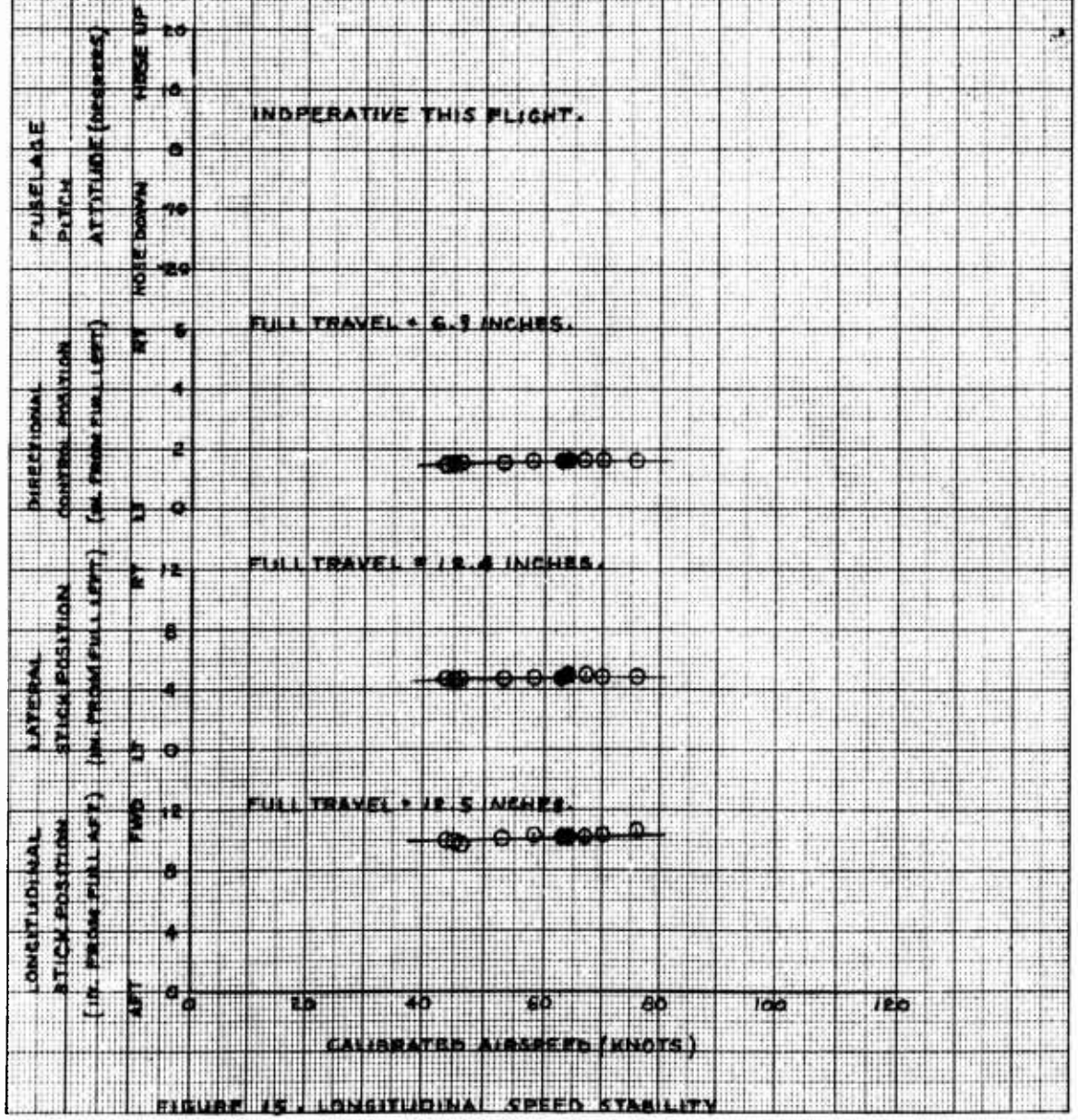


FIGURE 15. LONGITUDINAL SPEED STABILITY

JAH-1W USMC BAU #8-1077
TAOC-(2)-400 POWER PACKAGE
FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,050	4,500	+11.0	141.6	313	6.0
●	8,925	4,200	+11.5	141.2	312	5.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

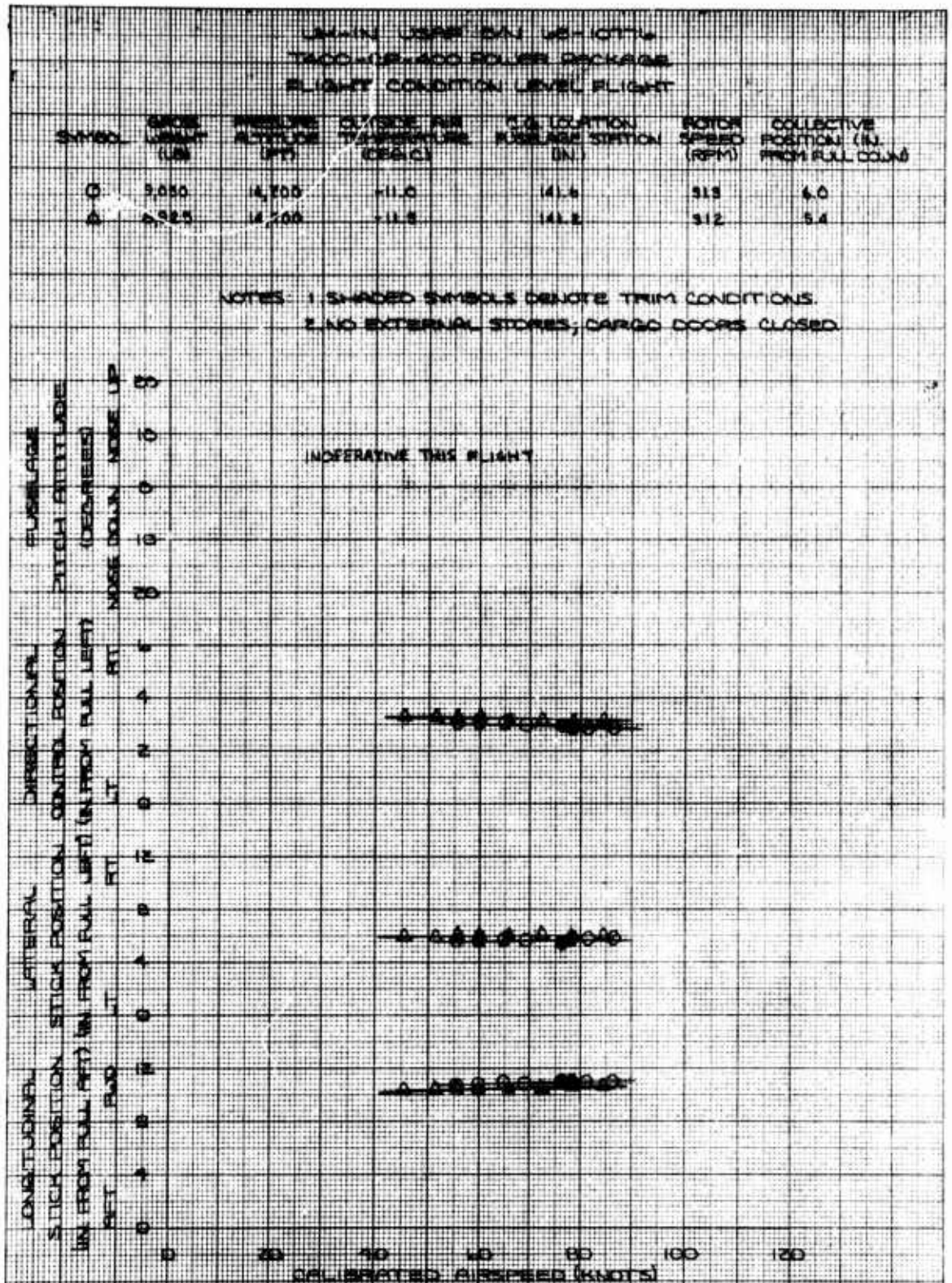


FIGURE 18. LONGITUDINAL SPEED STABILITY

UH-1N SERIES HELICOPTER

T700-GE-401 ENGINE INSTALLED

FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LBS)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	CALIBRATED AIRSPEED (KNOTS)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN FROM FULL DOWN)
○	10100	6540	14.8	133.5	314	6.75
□	10050	5980	12.8	134.7	314	5.8
△	9925	6450	14.0	132.4	313	4.0
◇	9885	6780	15.5	133.0	312	3.1

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

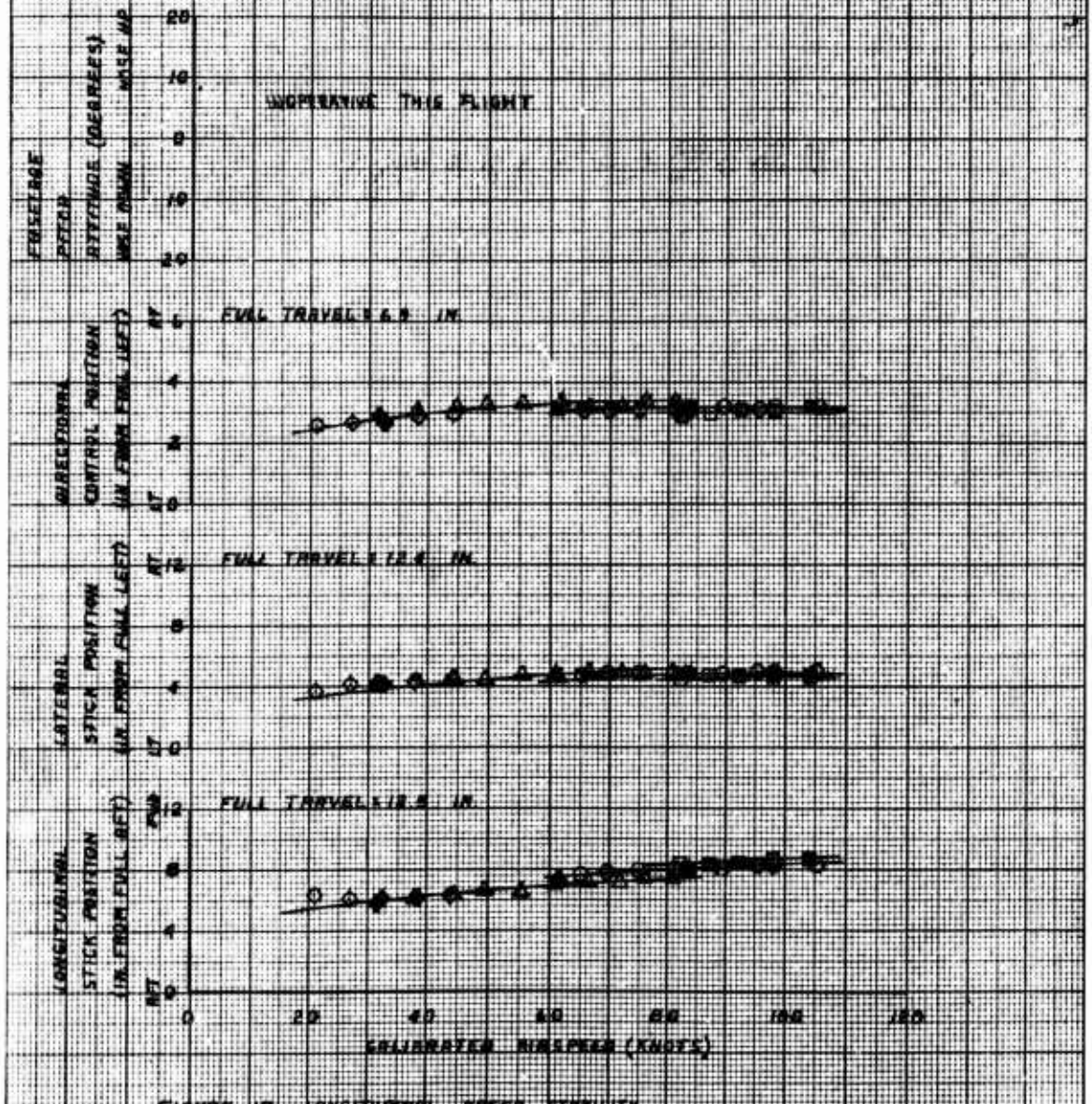


FIGURE 13. LONGITUDINAL SPEED STABILITY

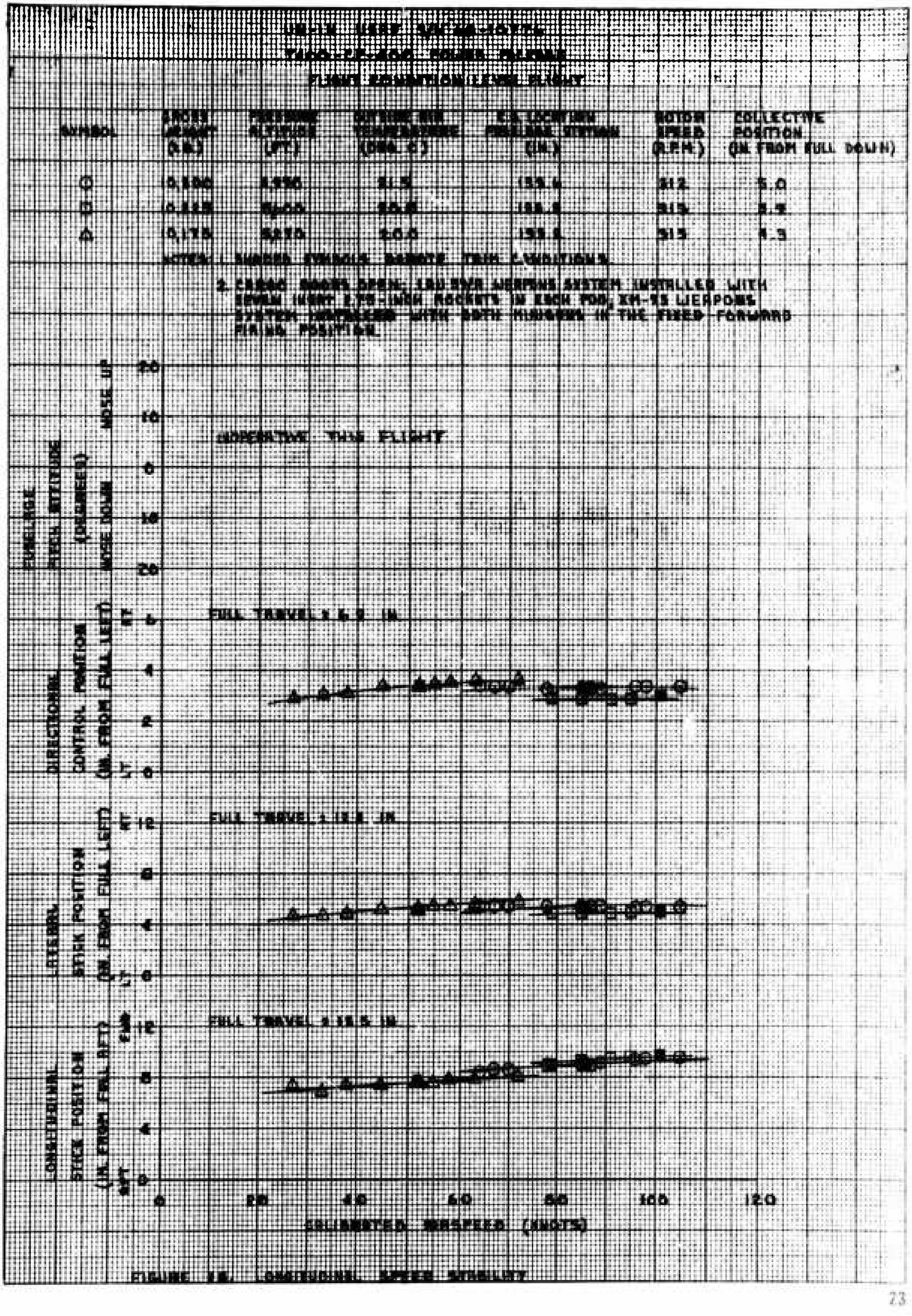


FIGURE [illegible]. LONGITUDINAL SPEED STABILITY

UH-1N USAF S/N 68-10775

YAGO-CP-406 POWER PACKAGE

FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,825	4,180	16.0	137.9	314	4.1
□	9,675	4,370	15.0	137.6	314	5.0
△	9,775	4,070	15.8	137.7	314	5.6
◇	9,700	4,120	14.5	137.5	313	3.8

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

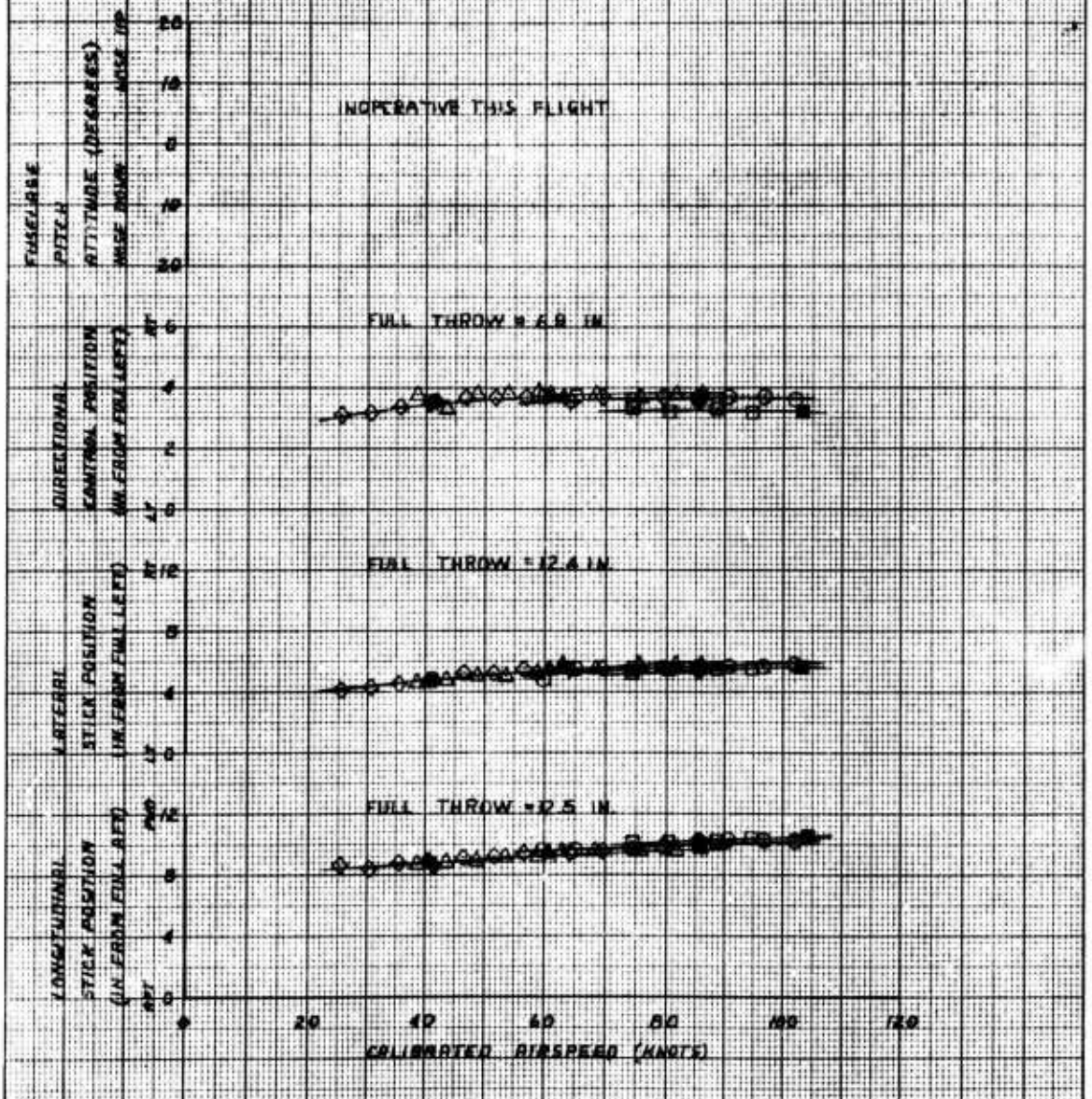


FIGURE 19. LONGITUDINAL SPEED STABILITY

UH-1N IN USAF S/N 68-10778
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (lb)	PRESSURE ALTITUDE (ft)	OUTSIDE AIR TEMPERATURE (deg C)	CG LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (rpm)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
△	10,160	5,400	20.6	138.8	313	4.8
○	10,360	5,746	21.5	139.1	313	4.9
□	10,280	5,436	22.5	139.2	312	5.8

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. CARGO DOORS OPEN; LAU 59/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-IN. ROCKETS IN EACH POD; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

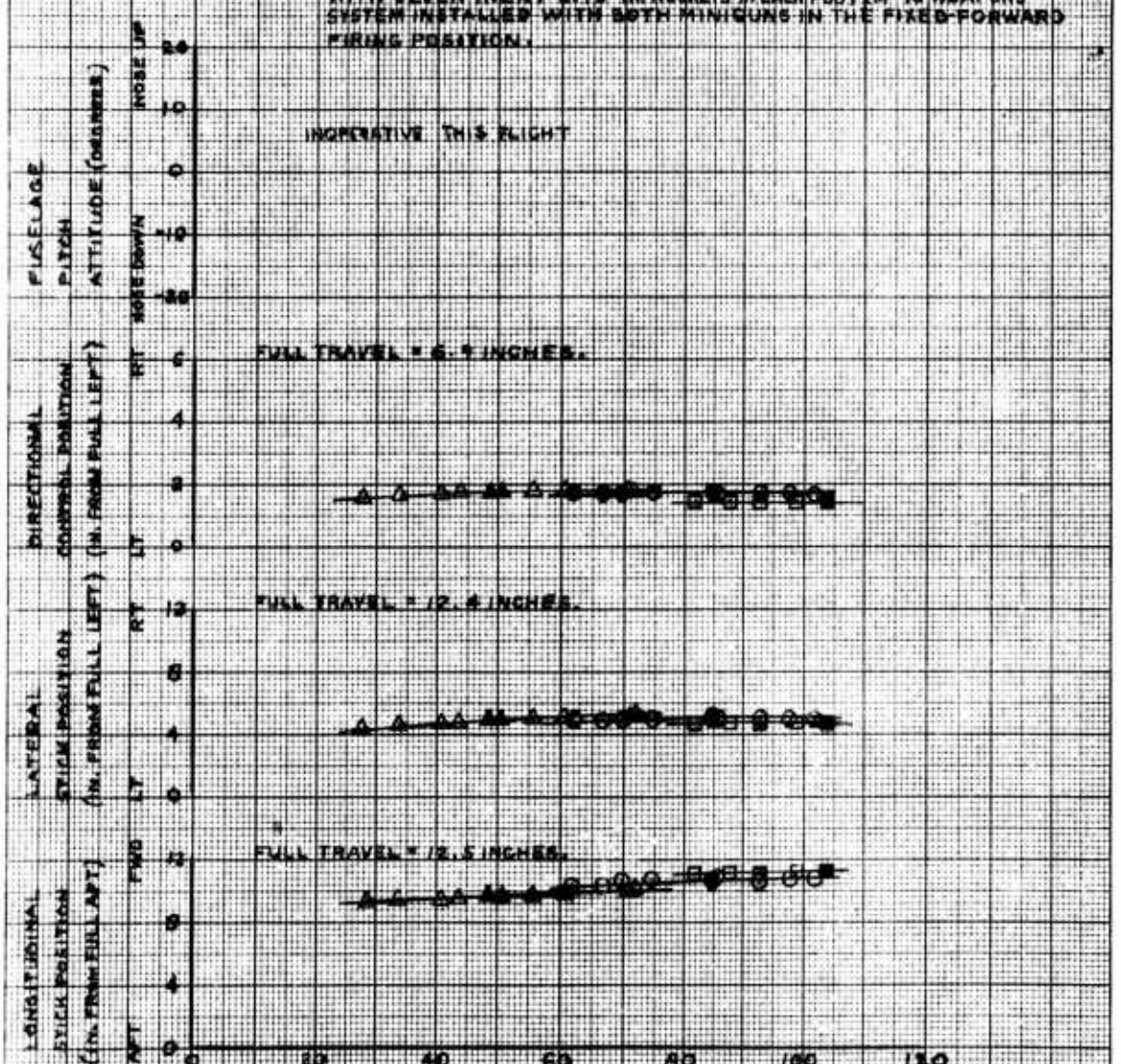


FIGURE 20. LONGITUDINAL SPEED STABILITY

UH-1N USAR S/N 70776

T400-CP-400 POWER RECORD

FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,925	9,120	4.0	192.9	313	4.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS
2. NO EXTERNAL STORES, CARGO DOORS CLOSED

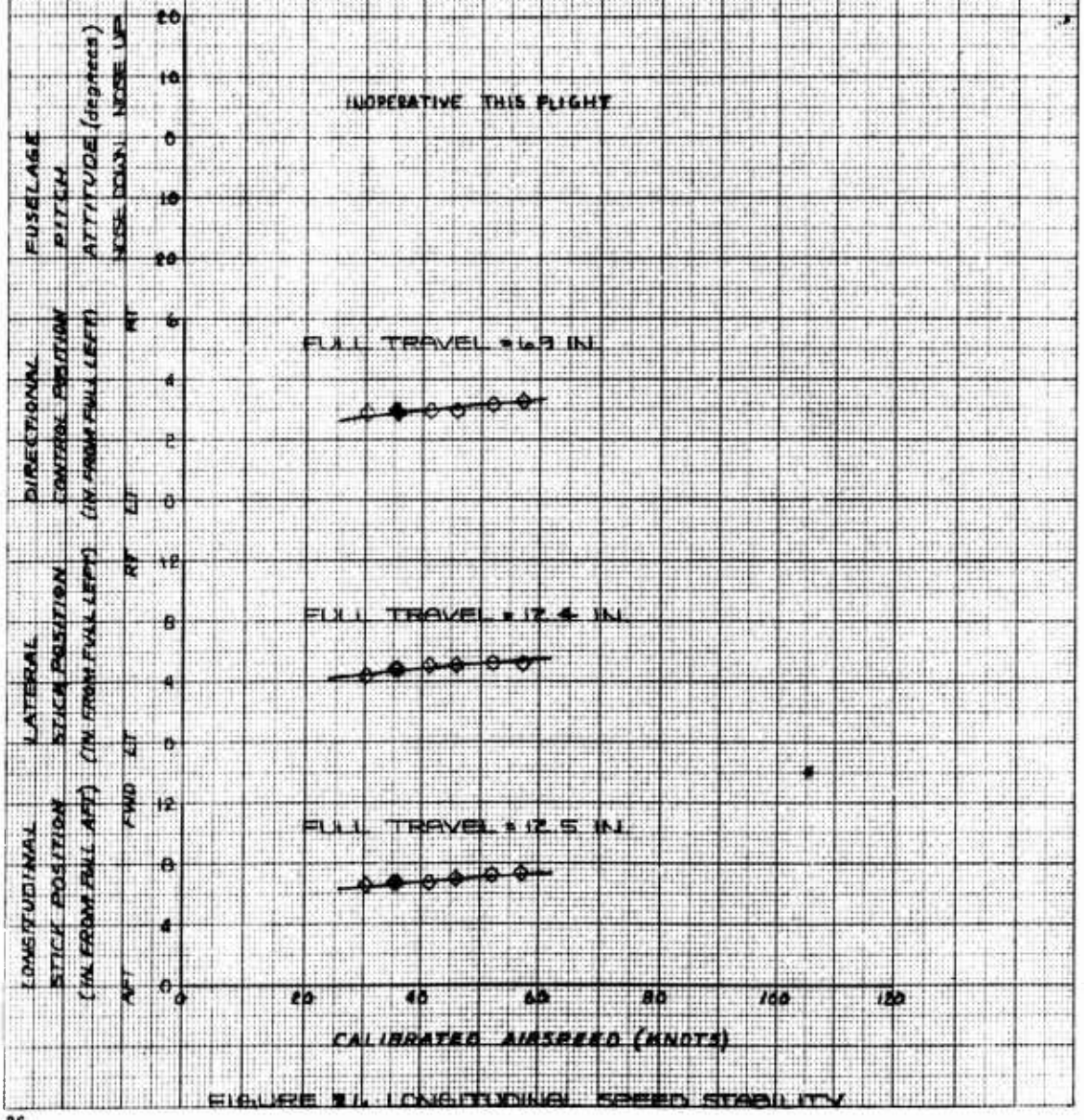


FIGURE 3-1. LONGITUDINAL SPEED STABILITY

UH-1N USAF SN 69-16776
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,250	5310	4.0	132.3	315	5.2
□	10,125	5580	4.0	132.5	315	5.3
△	10,025	5270	4.0	132.6	315	4.6

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

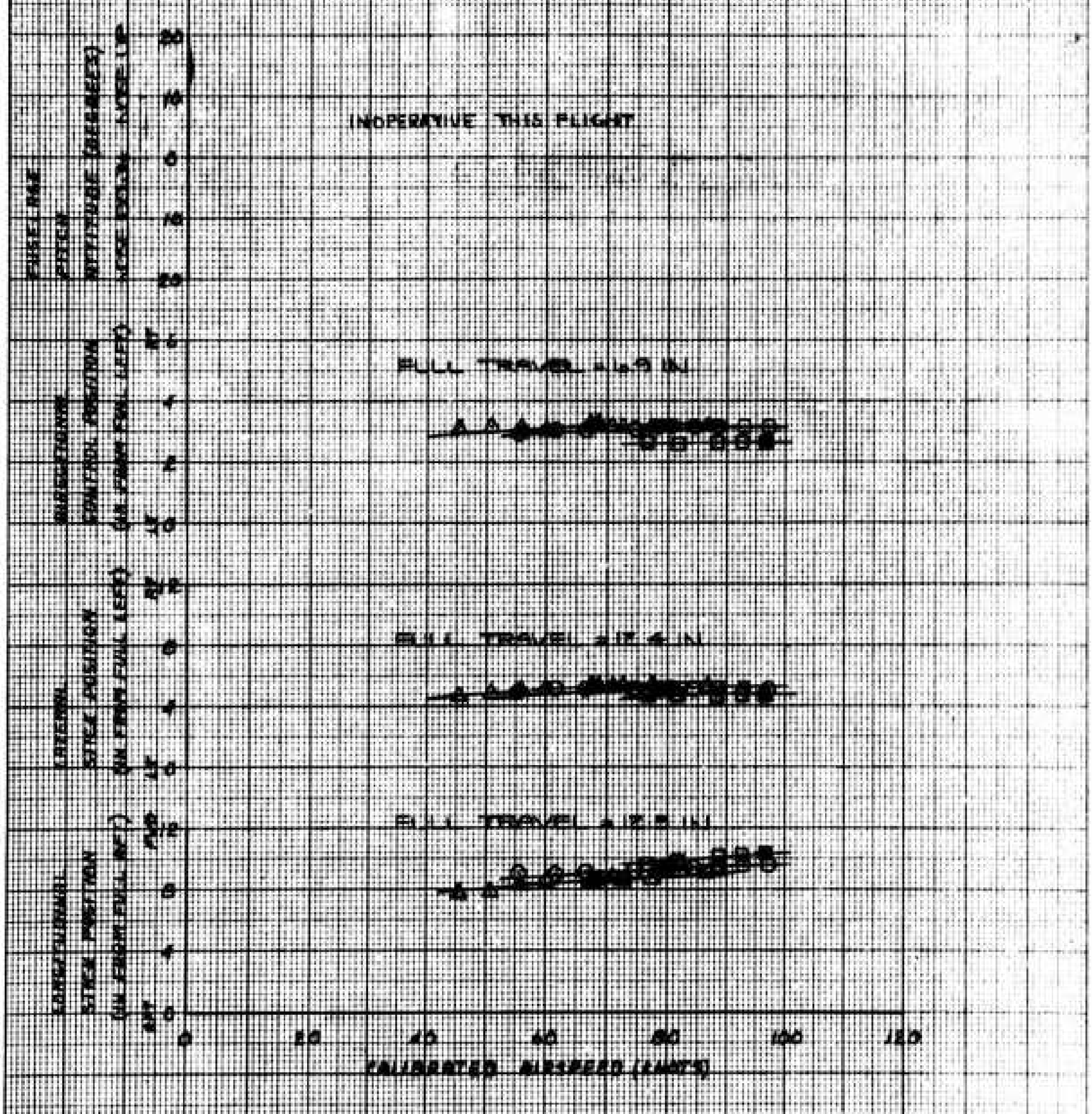


FIGURE 11. LONGITUDINAL SPEED STABILITY

UH-1N USAF S/N 68-10956
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: LEVEL FLIGHT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,900	3,760	6.5	138.3	313	5.4
▷	10,000	3,530	6.8	138.5	313	4.7
◇	9,850	3,230	6.5	138.0	312	4.7

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

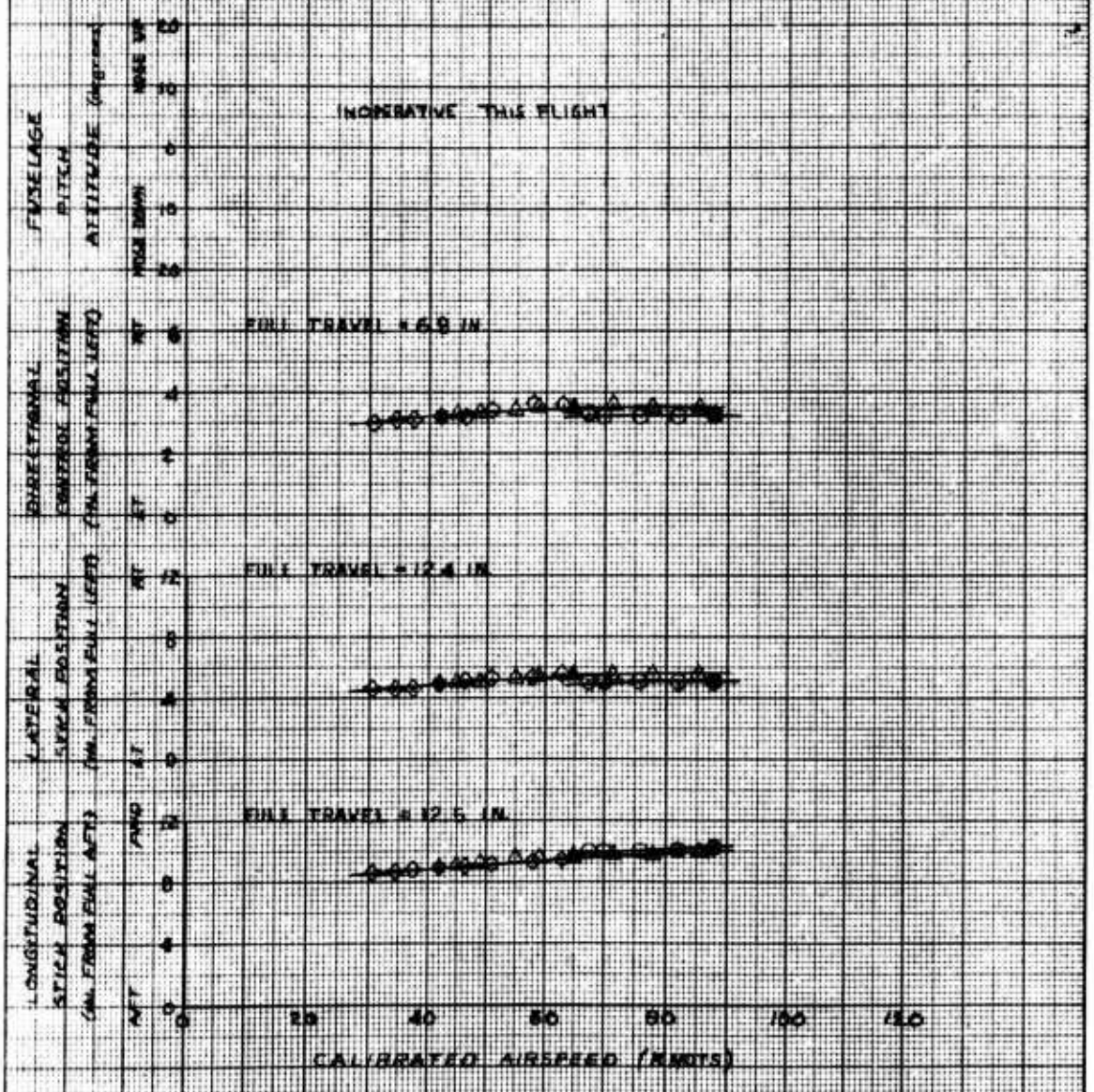


FIGURE 2-3. LONGITUDINAL SPEED STABILITY

UH-1N USAF SN 68-10776

TAKE-OFF AND POWER RECOVERY

FLIGHT CONDITION - POWERED DESCENT

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9800	4650	14.0	193.1	314	2.3
▷	10065	4850	15.0	192.8	314	2.3

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

INOPERATIVE THIS FLIGHT

FUSELAGE PITCH ATTITUDE (DEGREES) NOSE DOWN / NOSE UP

DIRECTIONAL CONTROL POSITION (IN. FROM FULL LEFT) LT / RT

FULL TRAVEL ± 4.5 IN.

LATERAL CYCLIC STICK POSITION (IN. FROM FULL LEFT) LT / RT

FULL TRAVEL ± 8.6 IN.

LONGITUDINAL CYCLIC STICK POSITION (IN. FROM FULL AFT) FWD / AFT

FULL TRAVEL 16.8 IN.

CALIBRATED AIRSPEED (KNOTS)

FIGURE 2-6. LONGITUDINAL SPEED STABILITY

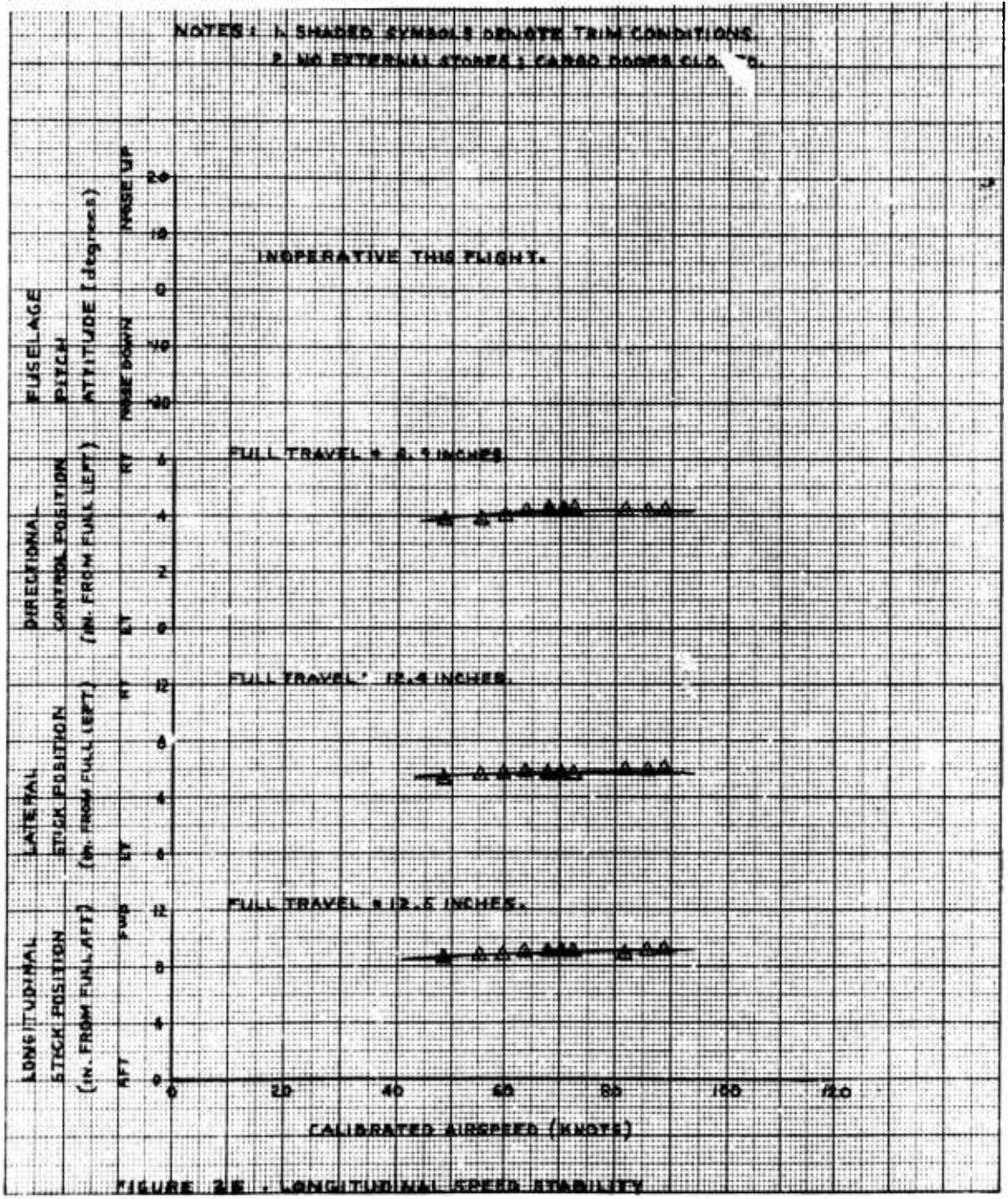


FIGURE 25. LONGITUDINAL SPEED STABILITY

UH-1B USAF S/N 58-1977
T53-L-13 ENGINE
FLIGHT CONDITION: POWERED DESCENT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
A	9850	1020	9.5	138.9	312	5.0

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

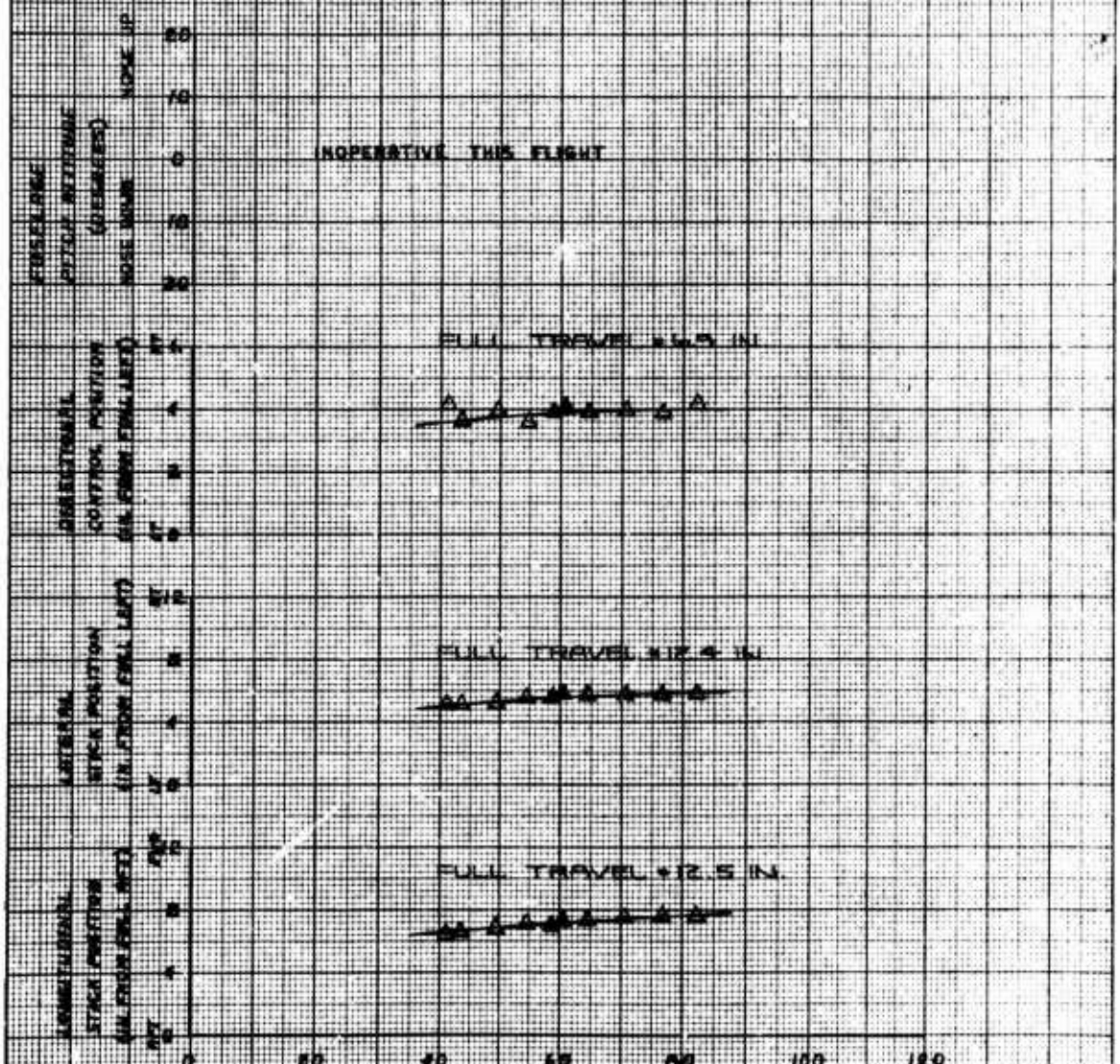


FIGURE 3.2 LONGITUDINAL SPEED STABILITY

UH-1N USAF S/N 68-10176
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION: POWERED DESCENT

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
△	9750	9120	1.0	237.6	312	3.3

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

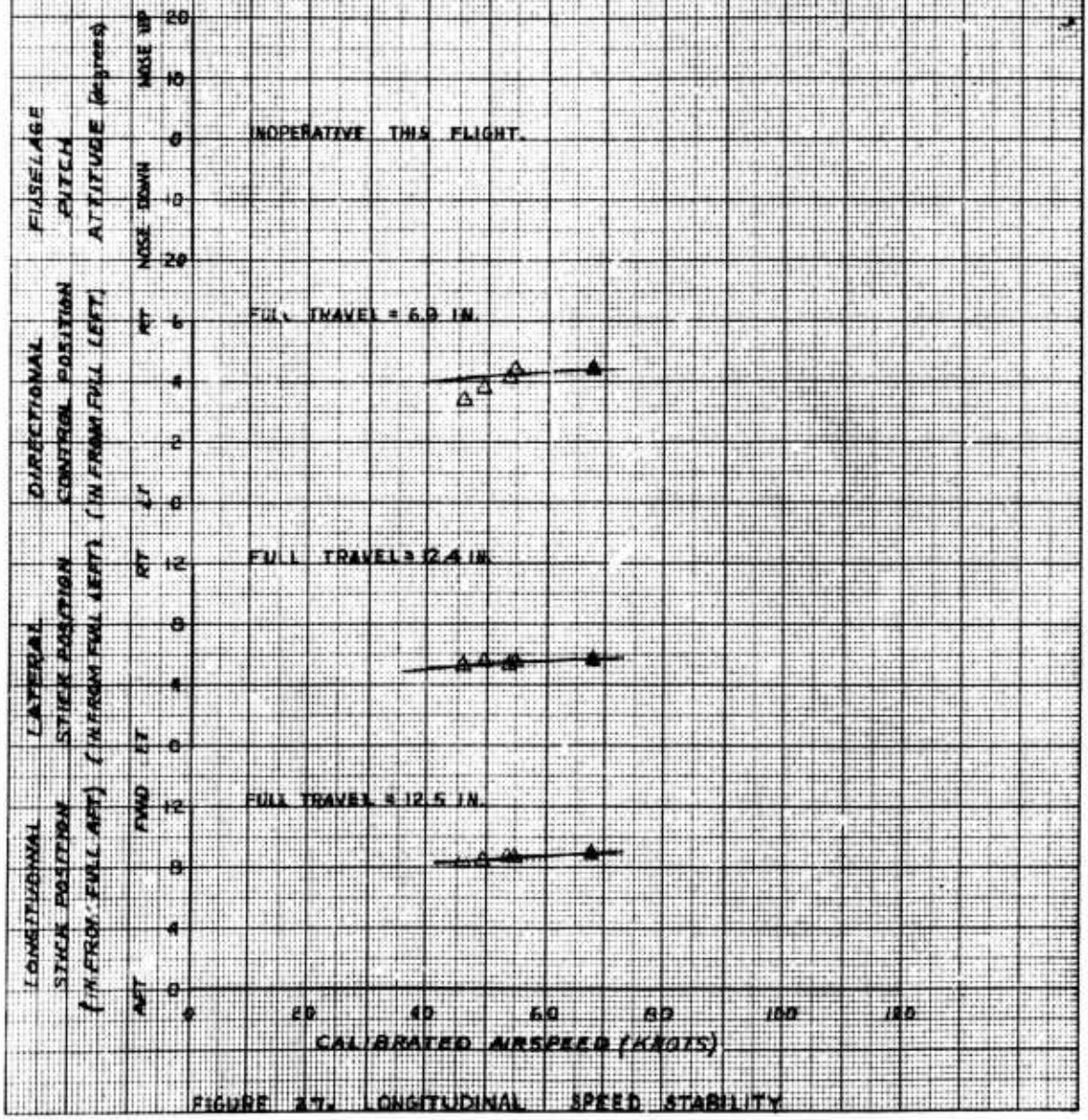


FIGURE 47. LONGITUDINAL SPEED STABILITY

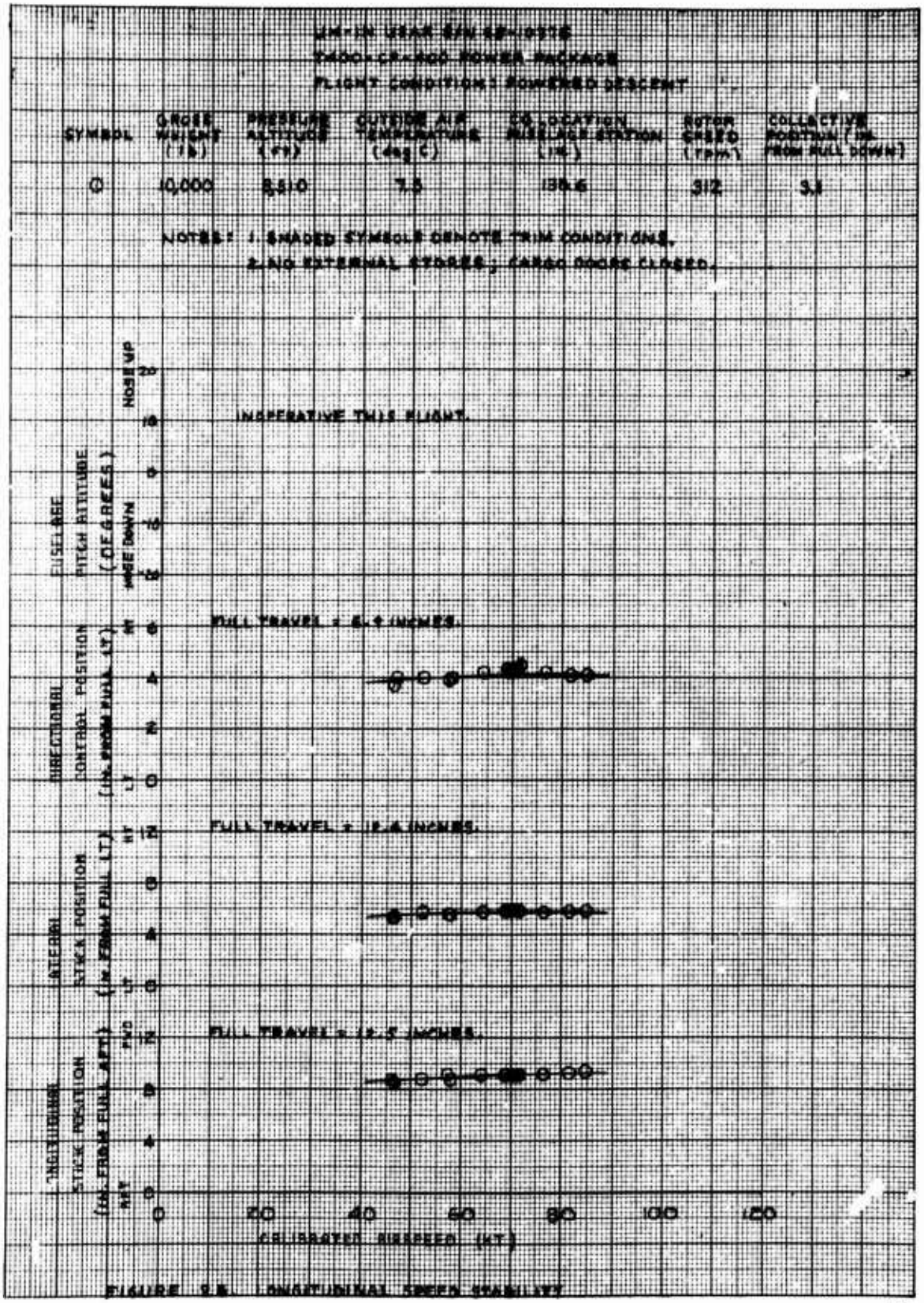
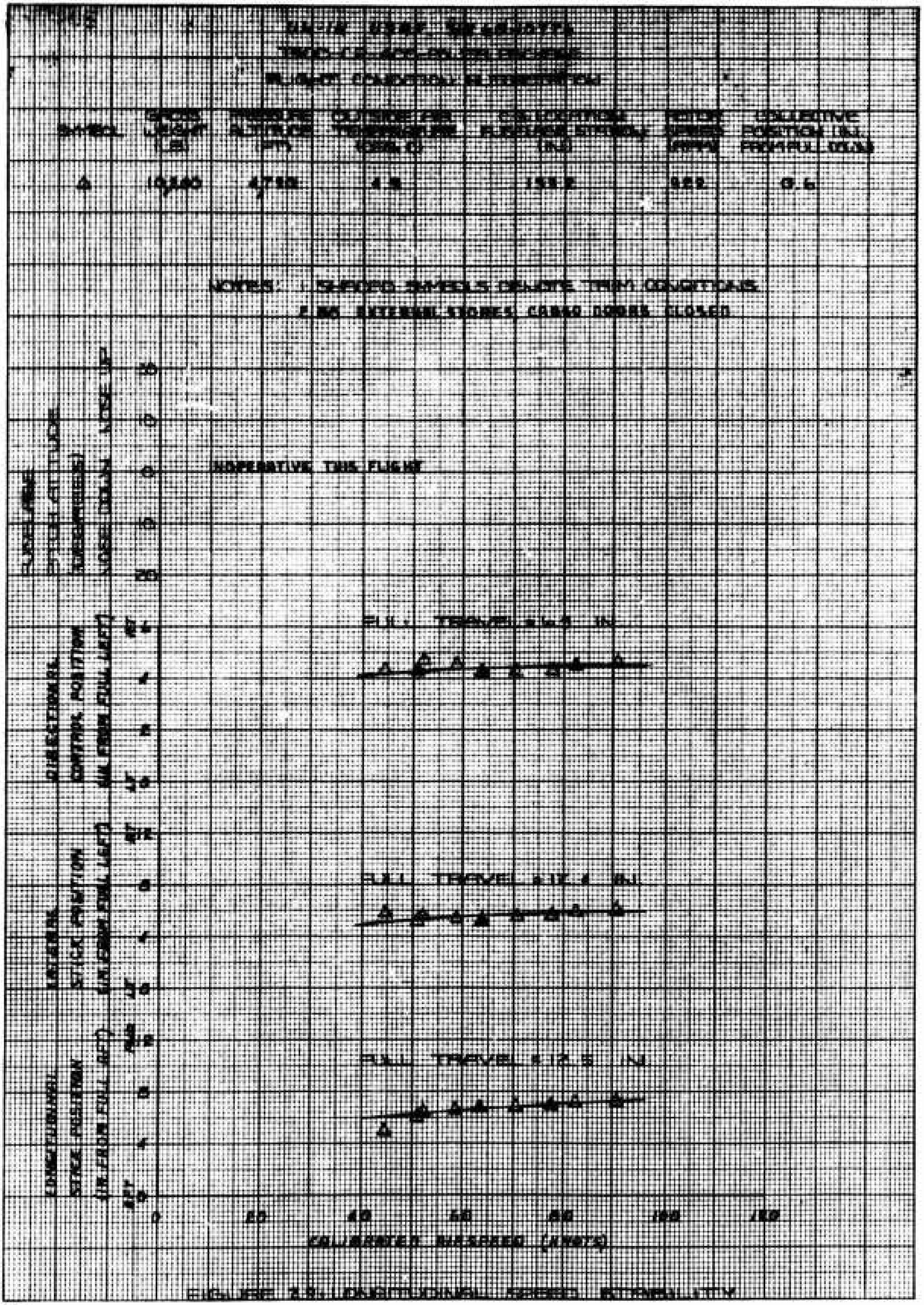
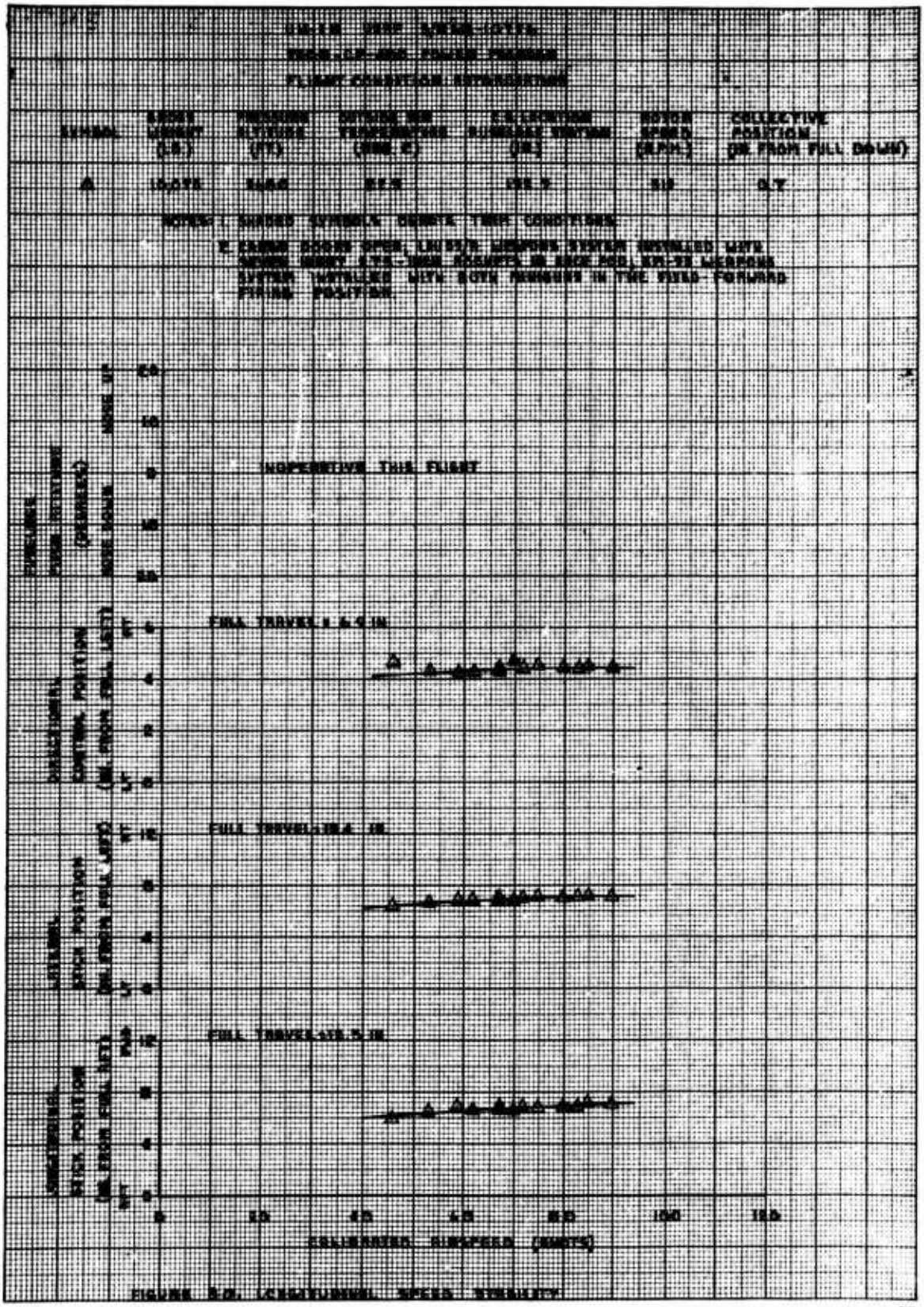


FIGURE 9.8. LONGITUDINAL SPEED STABILITY



LONGITUDINAL SPEED STABILITY


INOPERATIVE THIS FLIGHT
FULL TRAVEL ±8.4 IN.
FULL TRAVEL ±10.5 IN.
CALIBRATED AIRSPEED (KNOTS)

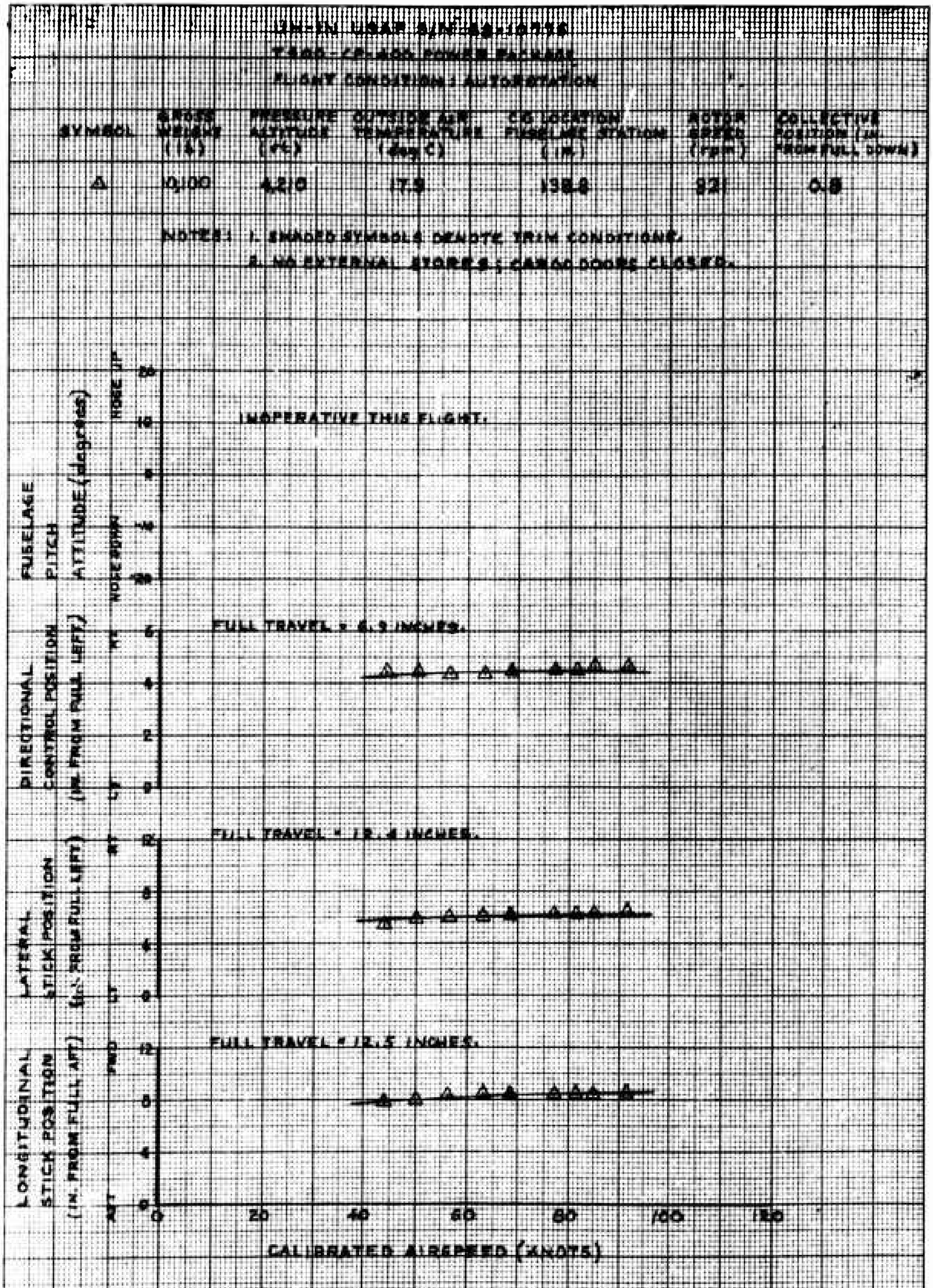


FIGURE 21. LONGITUDINAL SPEED STABILITY

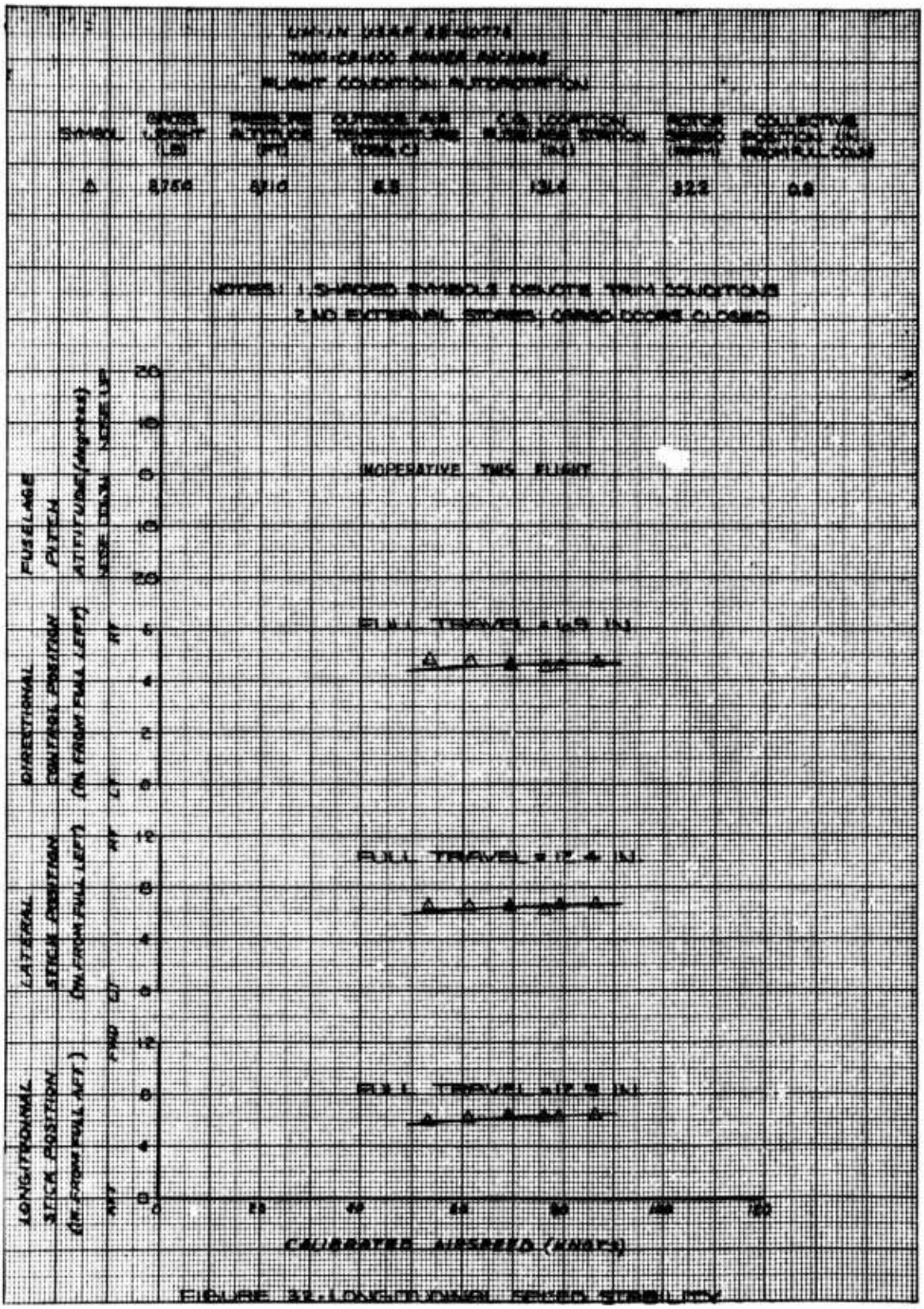


FIGURE 32. LONGITUDINAL FORCED STABILITY

UH-1N USAF S/N 68-10176
T400-CP-400 POWER PACKAGE
FLIGHT CONDITION LAUTOROTATION

SYMBOL	GROSS WEIGHT (lb)	PRESSURE ALTITUDE (ft)	OUTSIDE AIR TEMPERATURE (deg C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (rpm)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,800	8,300	6.5	137.8	322	1.1

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

INOPERATIVE THIS FLIGHT.

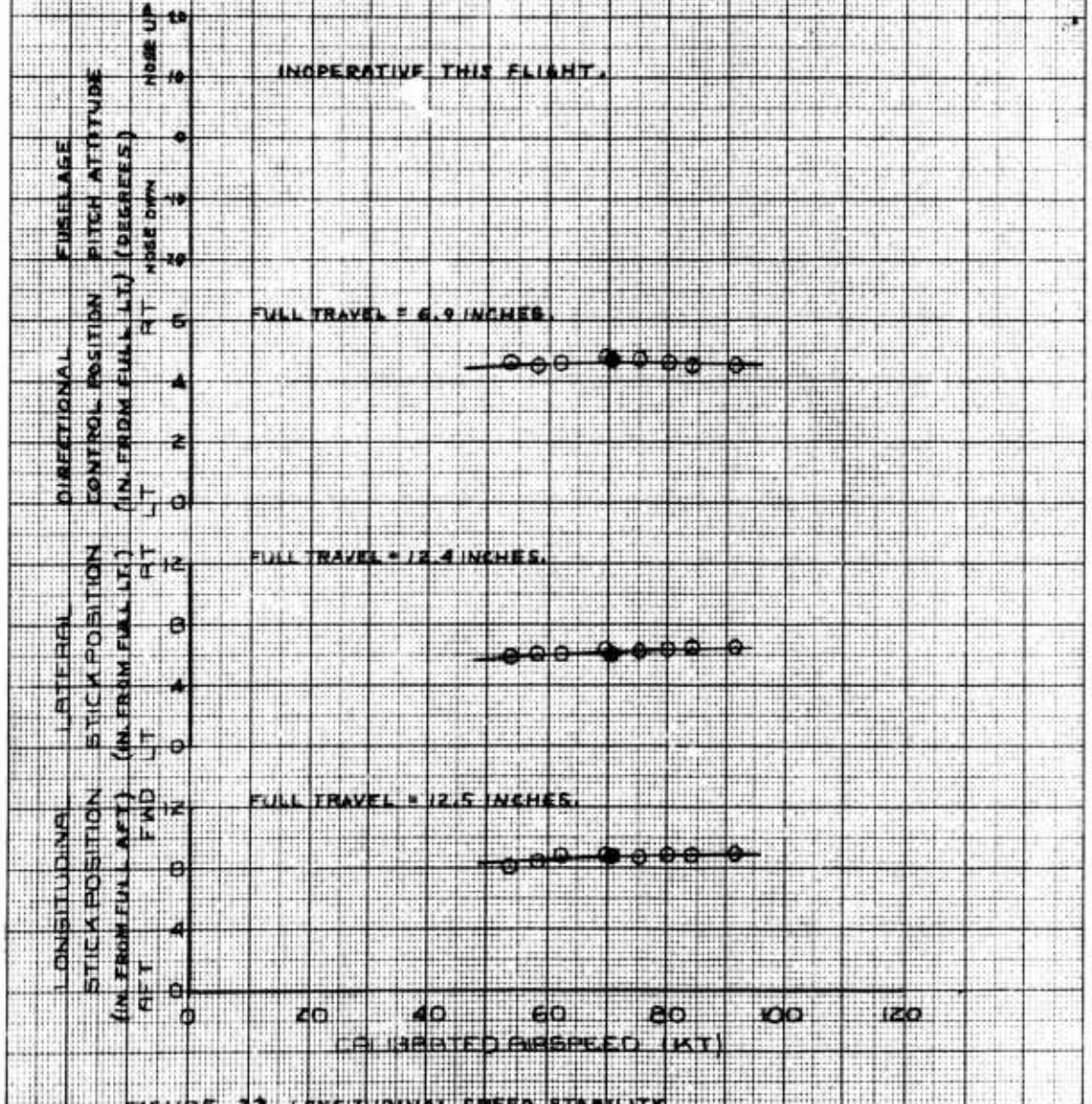


FIGURE 23. LONGITUDINAL SPEED STABILITY

UH-1N - USAF S/N 68-10776

T400-CP-400 POWER PACKAGE

FLIGHT CONDITION: AUTOROTATION

SYMBOL	GROSS WEIGHT (lb)	PRESSURE ALTITUDE (ft)	OUTSIDE AIR TEMPERATURE (deg C)	CG LOCATION FUSELAGE STATION (in.)	ROTOR SPEED (rpm)	COLLECTIVE POSITION (in. FROM FULL DOWN)
△	9,995	6,510	21.5	138.4	324	1.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN ; LAU-59/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-IN. ROCKETS IN EACH POD ; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

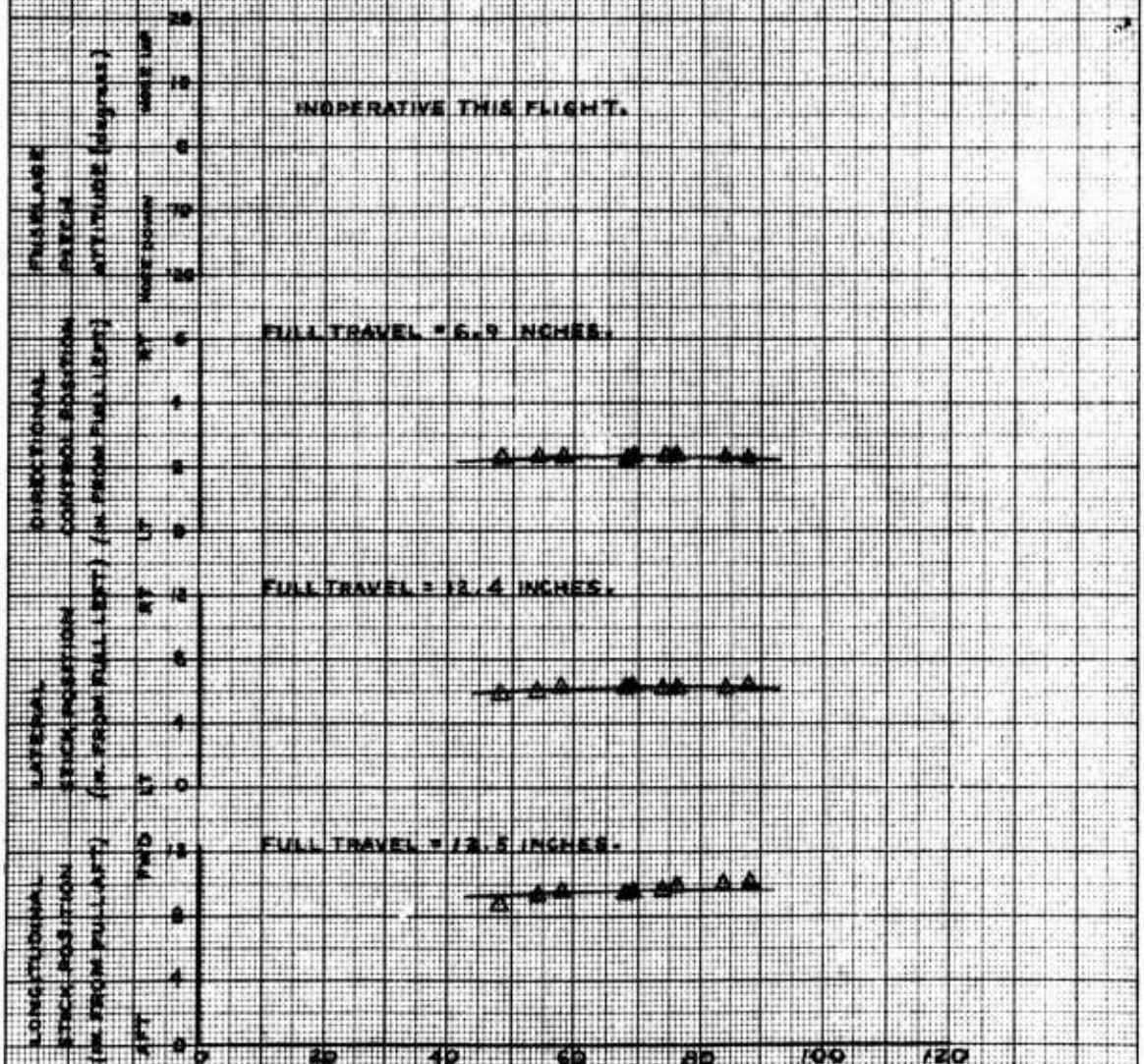


FIGURE 34. LONGITUDINAL SPEED STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
RIGHT SIDESLIPS

NOTES: 1) EXTERNAL ARMAMENT INCLUDES TWO LAU-59/A ROCKET LAUNCHERS WITH SEVEN MK66 2.75 IN. ROCKETS IN EACH POD, TWO XM-93 WEAPONS SYSTEMS INSTALLED IN THE FIXED-FORWARD FIRING MODE, CARGO DOORS OPEN.
2) FAIRINGS DERIVED FROM FIGURES THROUGH , APPENDIX I
3) SLOPES OF CONTROL POSITION VERSUS SIDESLIP ANGLE ARE LOCAL VALUES FROM 0 TO 20 DEGREES RIGHT SIDESLIP ANGLE

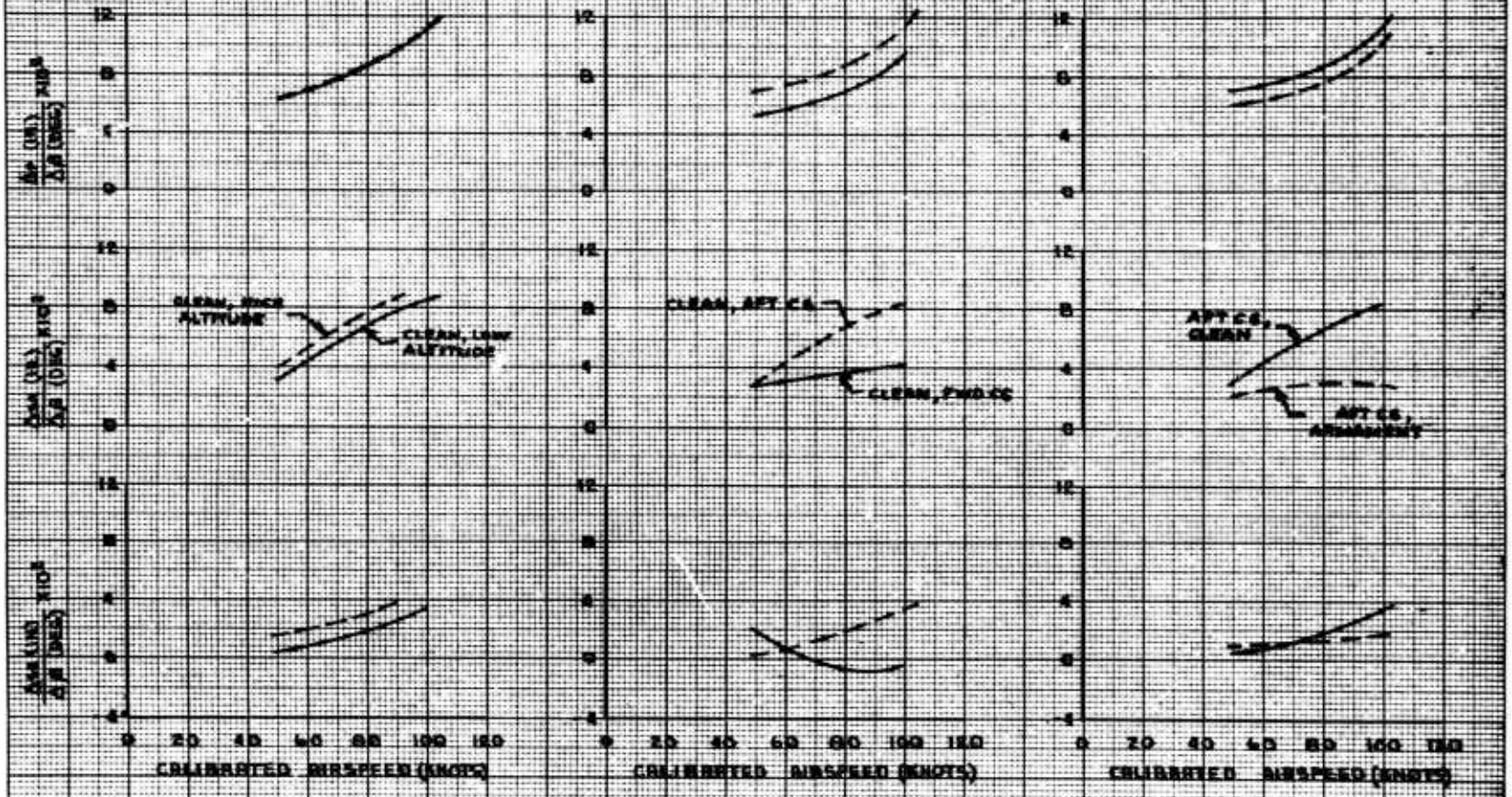


FIGURE 3-5. SUMMARY OF STATIC LATERAL-DIRECTIONAL CHARACTERISTICS

UH-1N USAF S/N 68-10176
T400-CP-400 POWER PACKAGE
LEFT SIDESLIPS

NOTES: 1) EXTERNAL ARMAMENT INCLUDES TWO LAU-59/A ROCKET LAUNCHERS WITH SEVEN (WEST 2.75 IN. ROCKETS IN EACH POD; TWO XM-93 WEAPONS SYSTEMS INSTALLED IN THE FIXED-FORWARD FIRING MODE; CARGO DOORS OPEN.
2) FAIRINGS DERIVED FROM FIGURES THROUGH , APPENDIX I.
3) SLOPES OF CONTROL POSITION VERSUS SIDESLIP ANGLE ARE LOCAL VALUES FROM 0 TO 20 DEGREES LEFT SIDESLIP ANGLE.

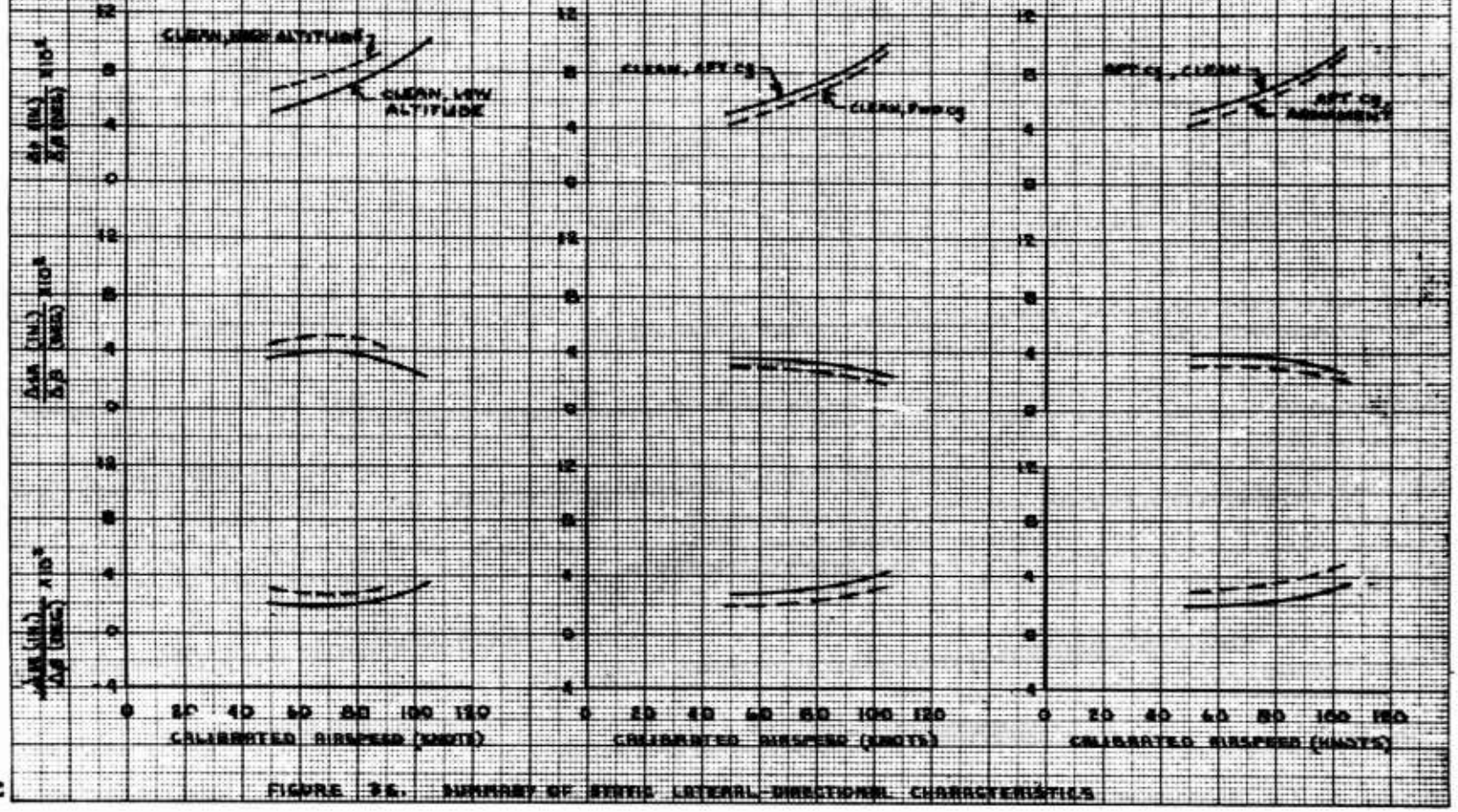


FIGURE 36. SUMMARY OF HYDRO LATERAL-DIRECTIONAL CHARACTERISTICS

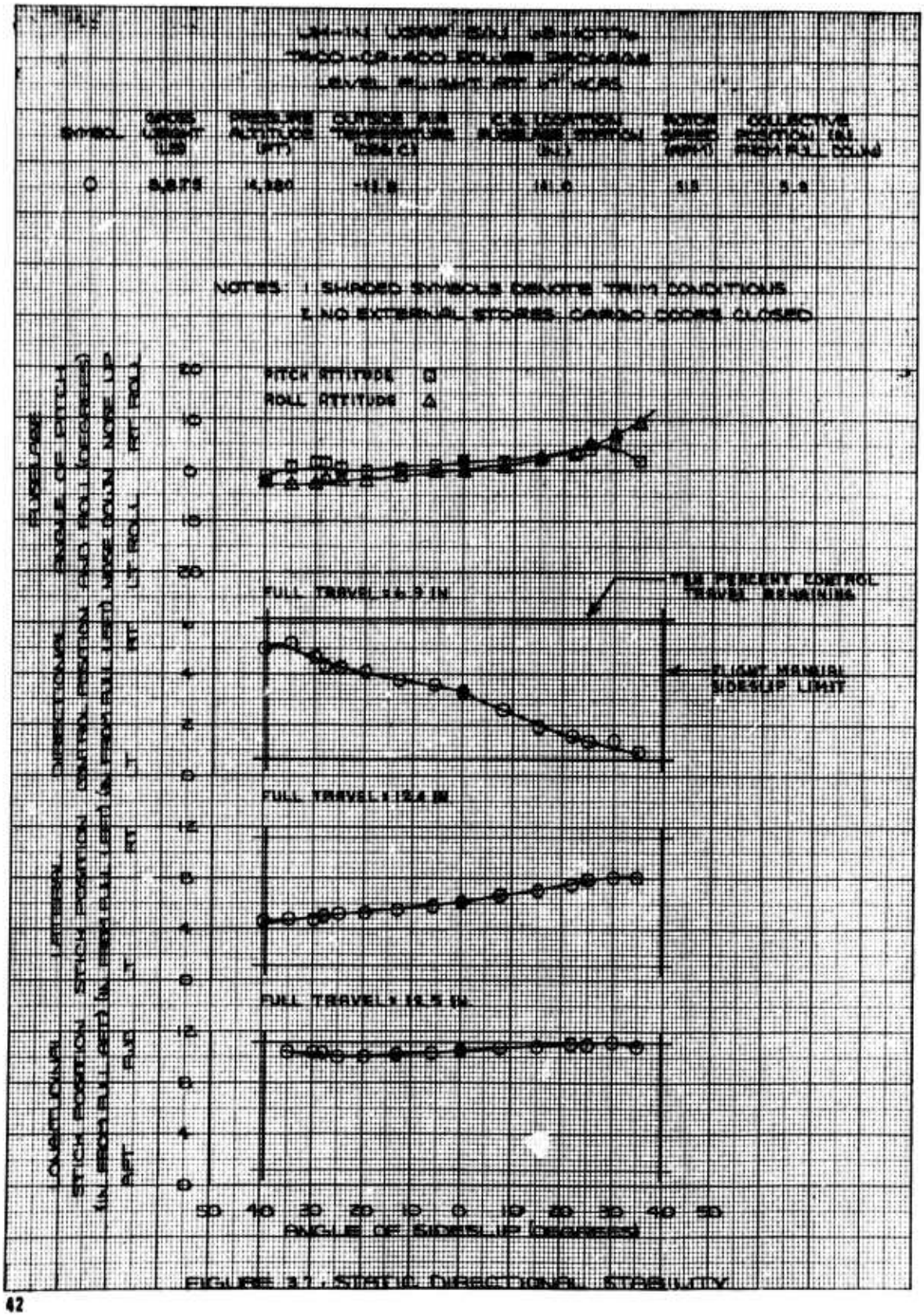


FIGURE 3-7. STATIC DIRECTIONAL STABILITY

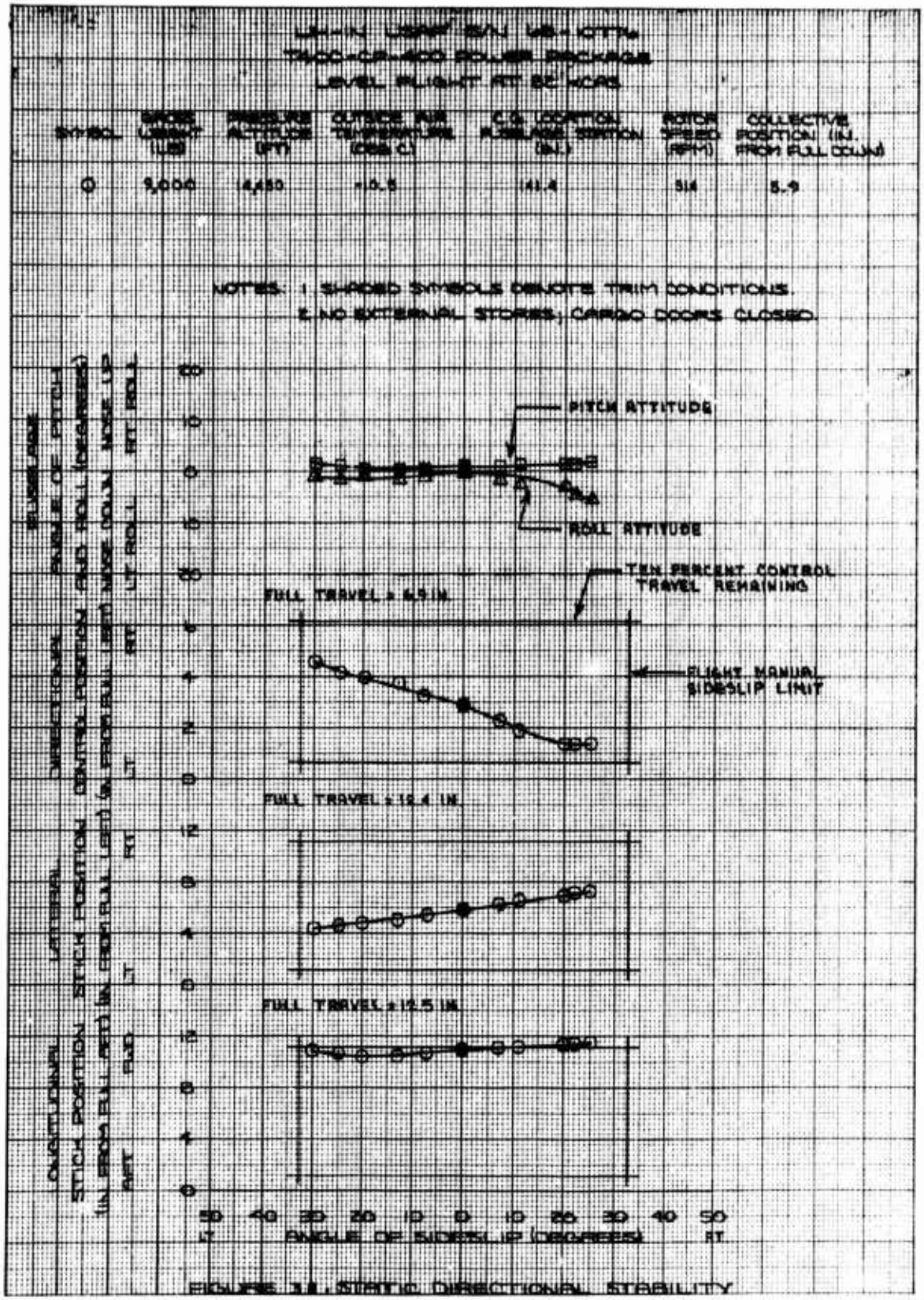


FIGURE 3-8. STATIC DIRECTIONAL STABILITY

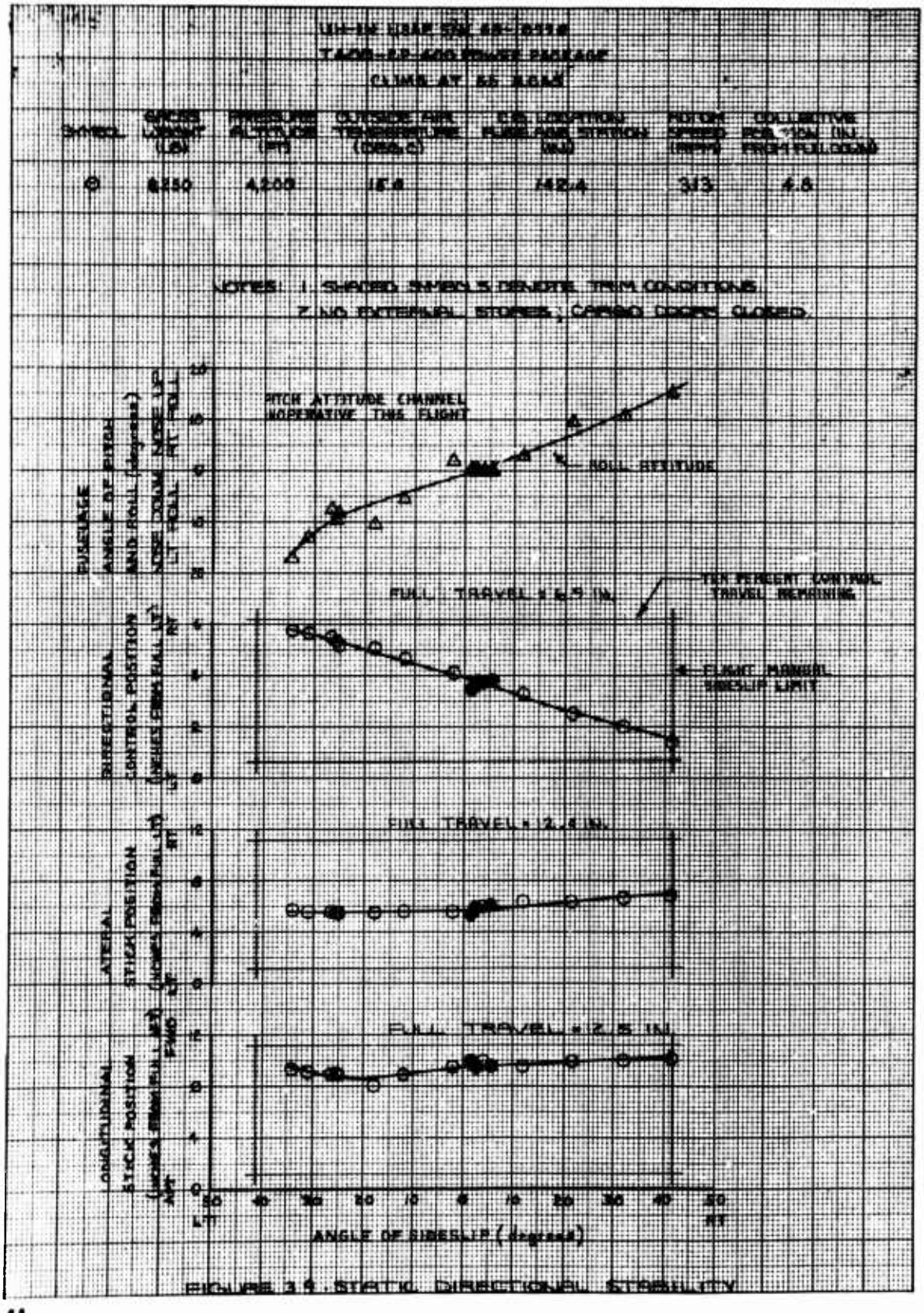


FIGURE 3-5. STATIC DIRECTIONAL STABILITY

UH-1N USAF SN 68-10776

TMCO-CP-400 POWER PROGRAM

CLIMB AT 60 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN.) FROM FULL DOWN
○	10,175	4956	11.0	153.2	313	5.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

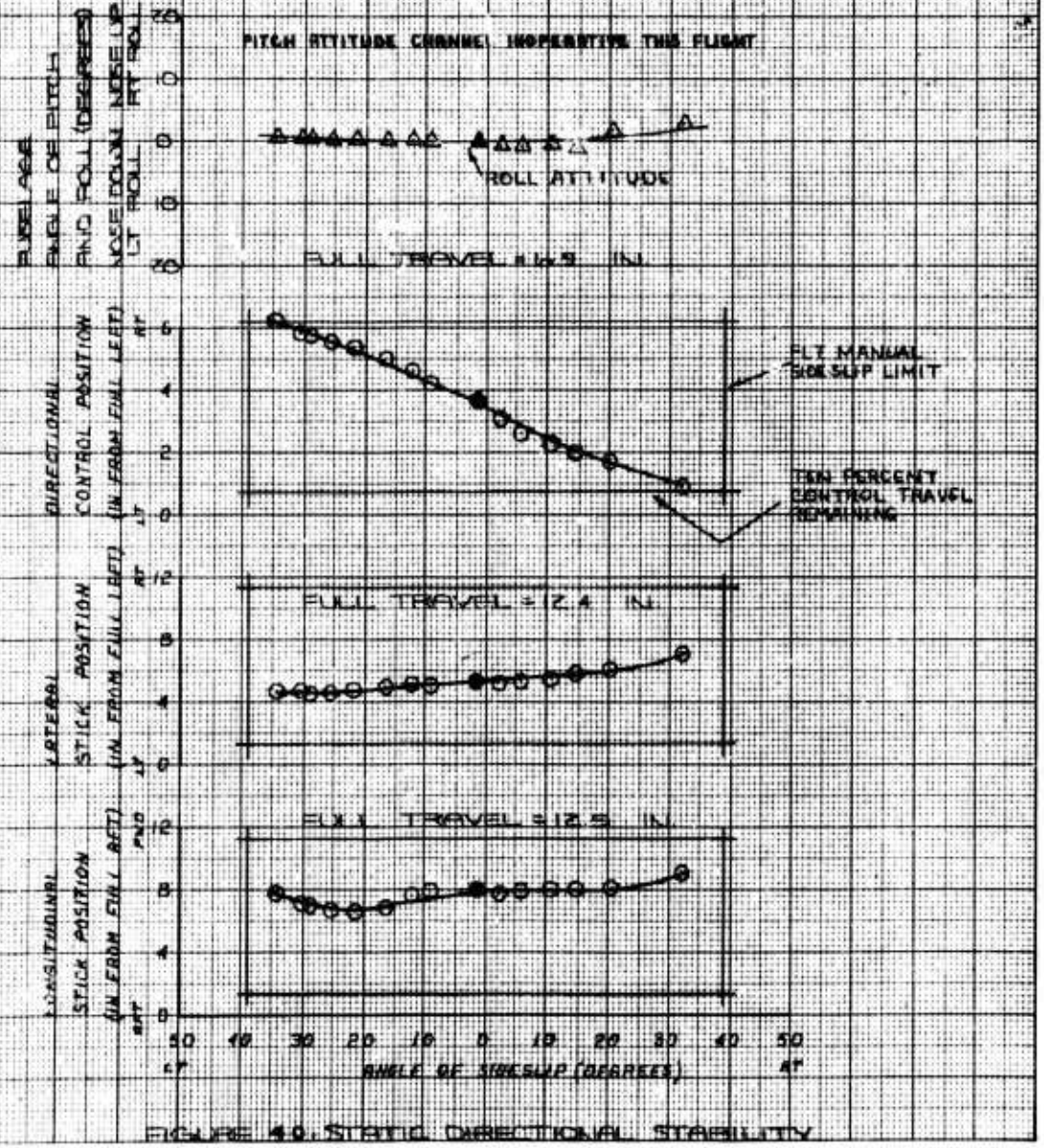


FIGURE 4-9. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10778

T400-CP-400 POWER PACKAGE

CLIMB AT Vbi MODE

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,725	4,895	9.5	137.4	313	5.1

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

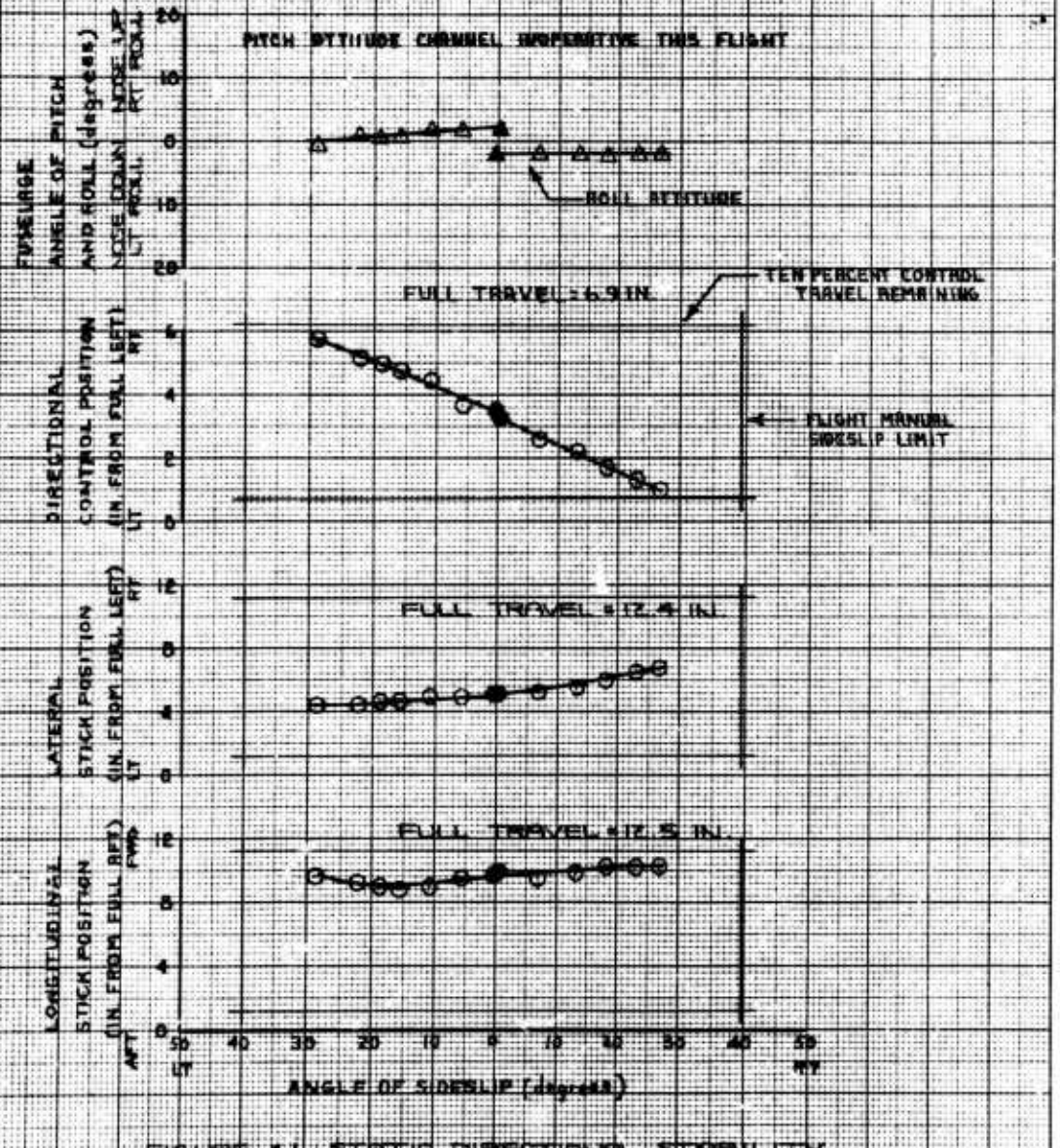


FIGURE 4-1. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776

TAOC-CR-400 ROTOR BRAKE

CLIMB AT 144 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊘	9625	4,080	+6.5	132.0	312	5.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN; LAU-59/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

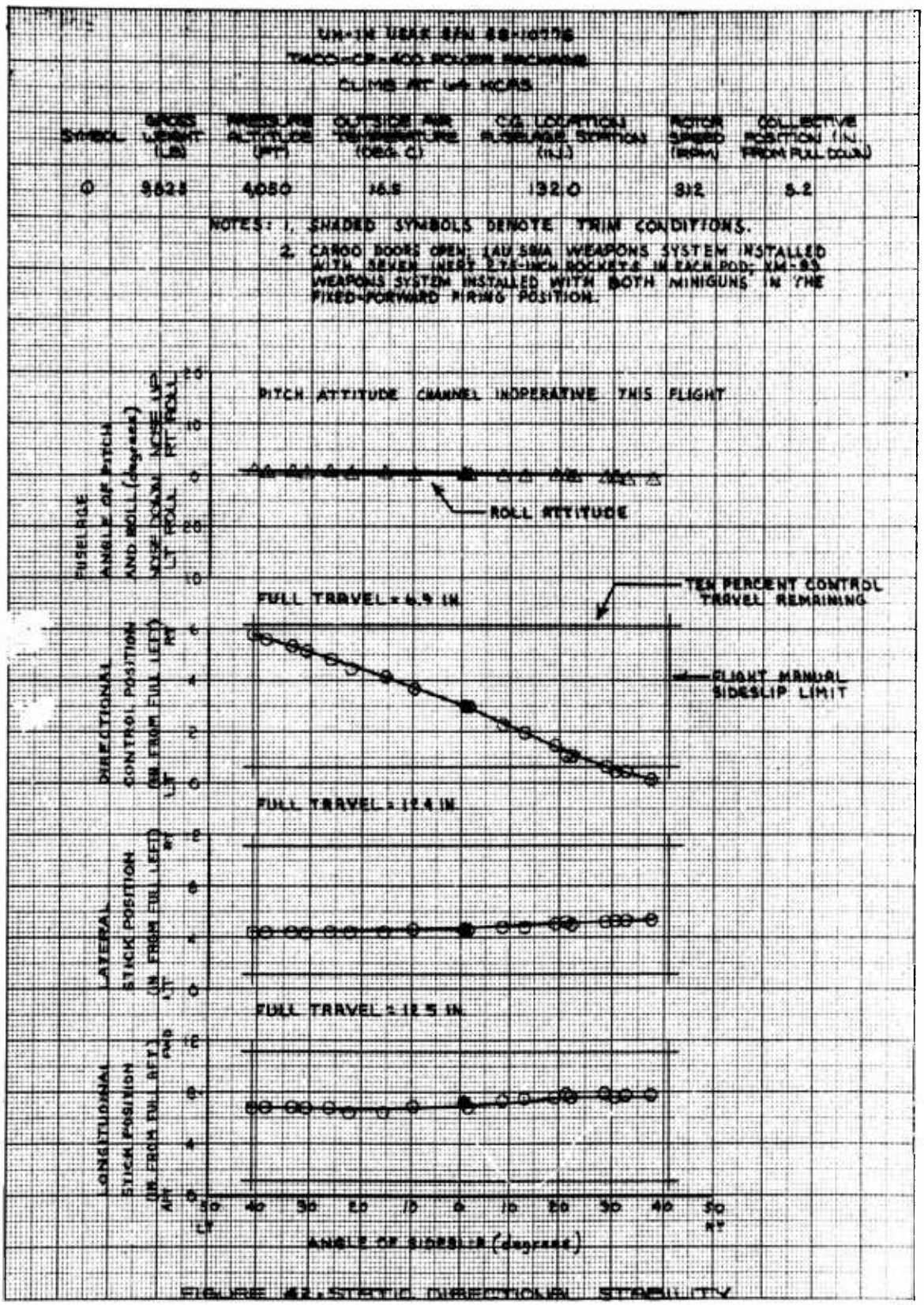


FIGURE 62. STATIC DIRECTIONAL STABILITY

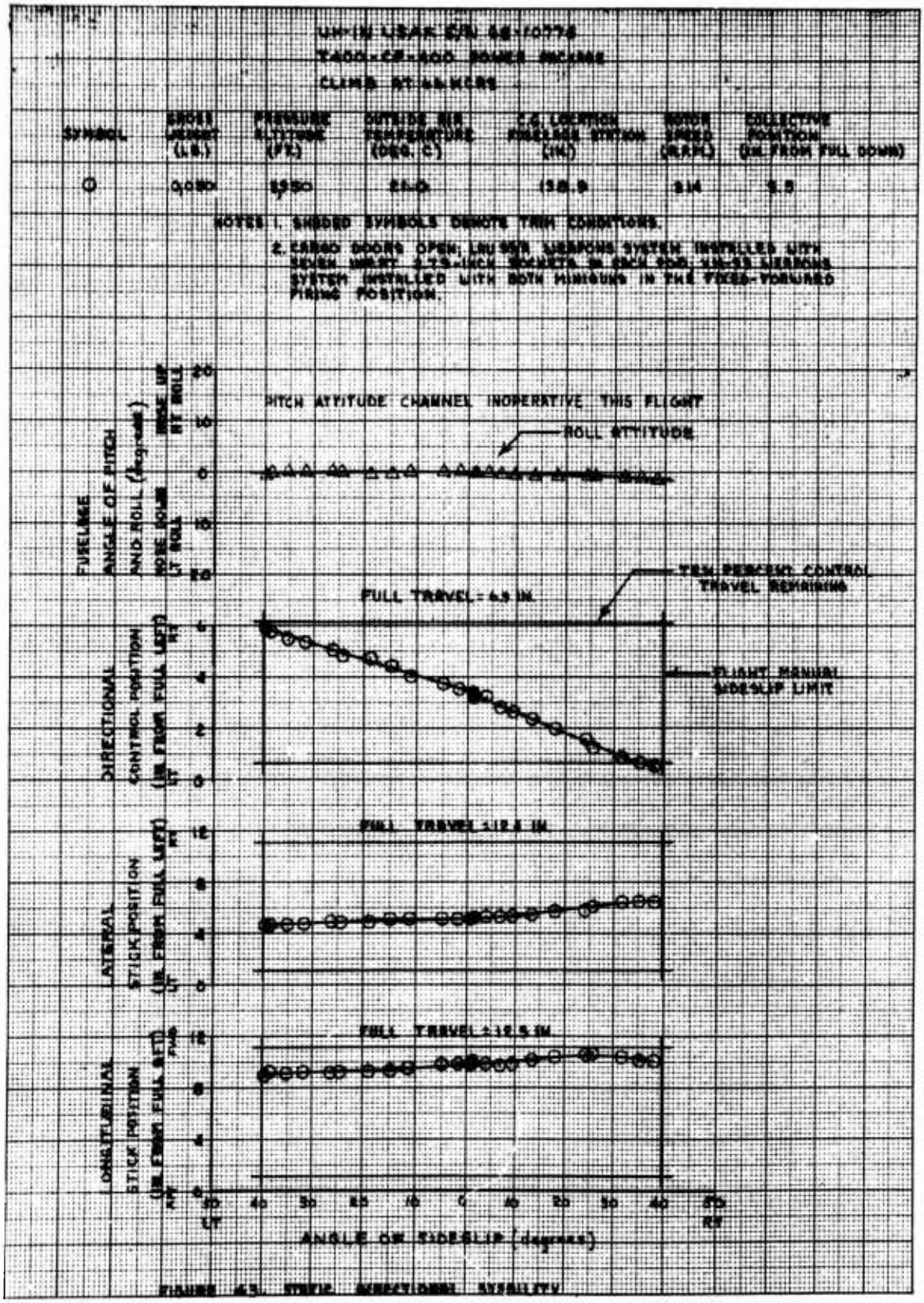


FIGURE 43. STATIC DIRECTIONAL STABILITY

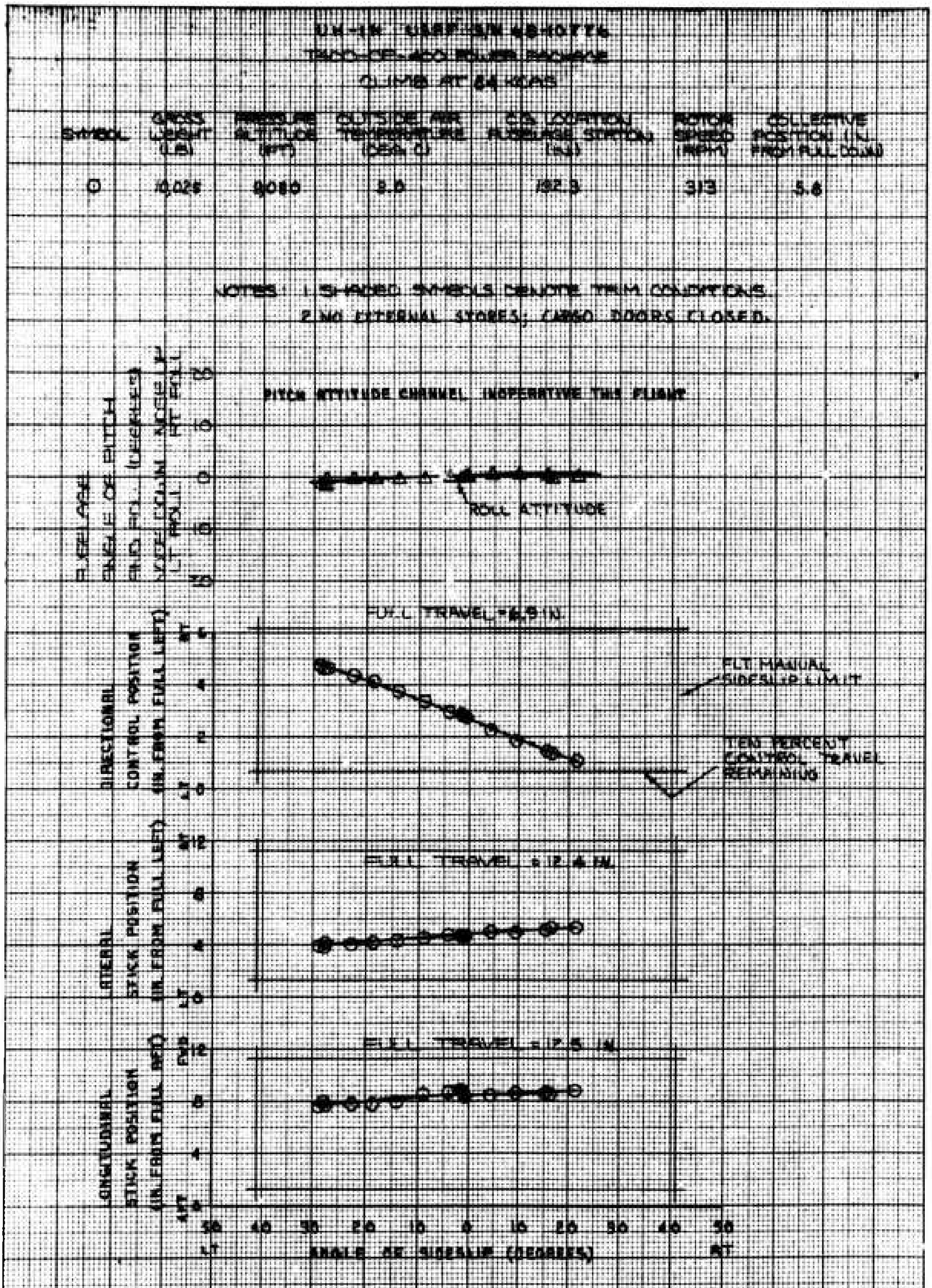


FIGURE 48. STATIC DIRECTIONAL STABILITY

UH-1N USAF SER 68-10778
T400-CP-400 POWER PACKAGE
CLIMB AT 70 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,000	8500	4.0	134.4	312	5.7

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

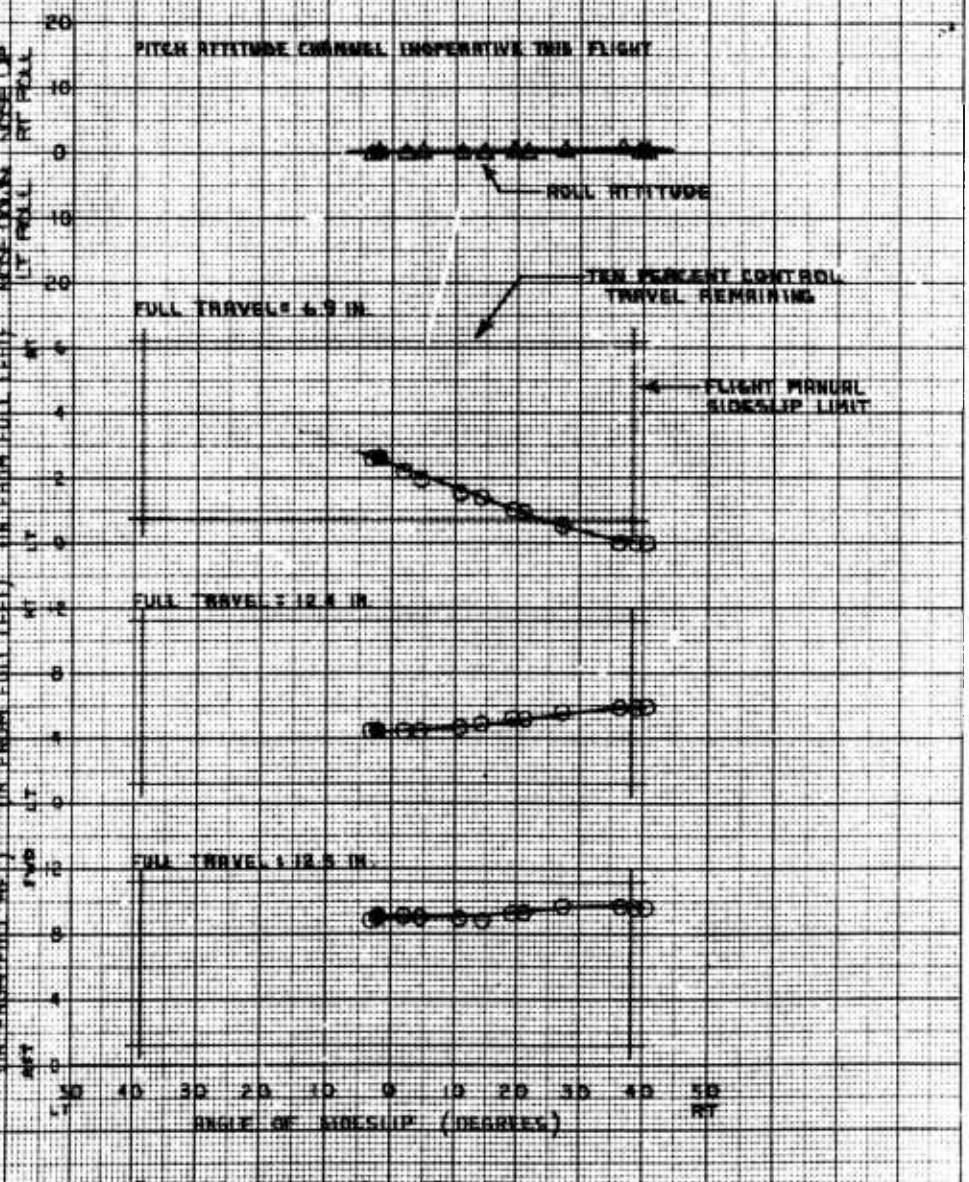


FIGURE 4-8. STATIC DIRECTIONAL STABILITY

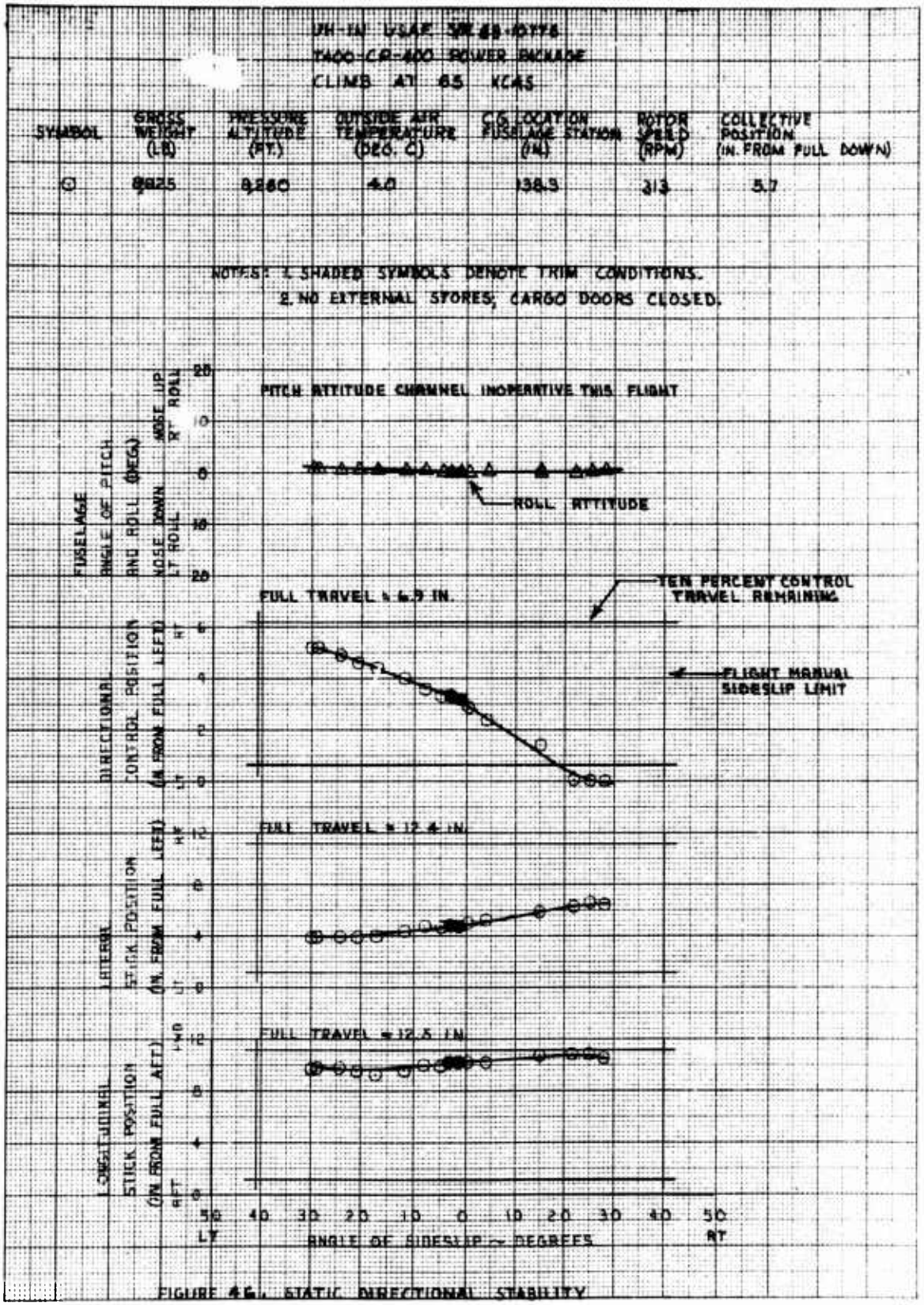


FIGURE 46. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 54 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	8378	3520	14.5	142.9	313	3.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

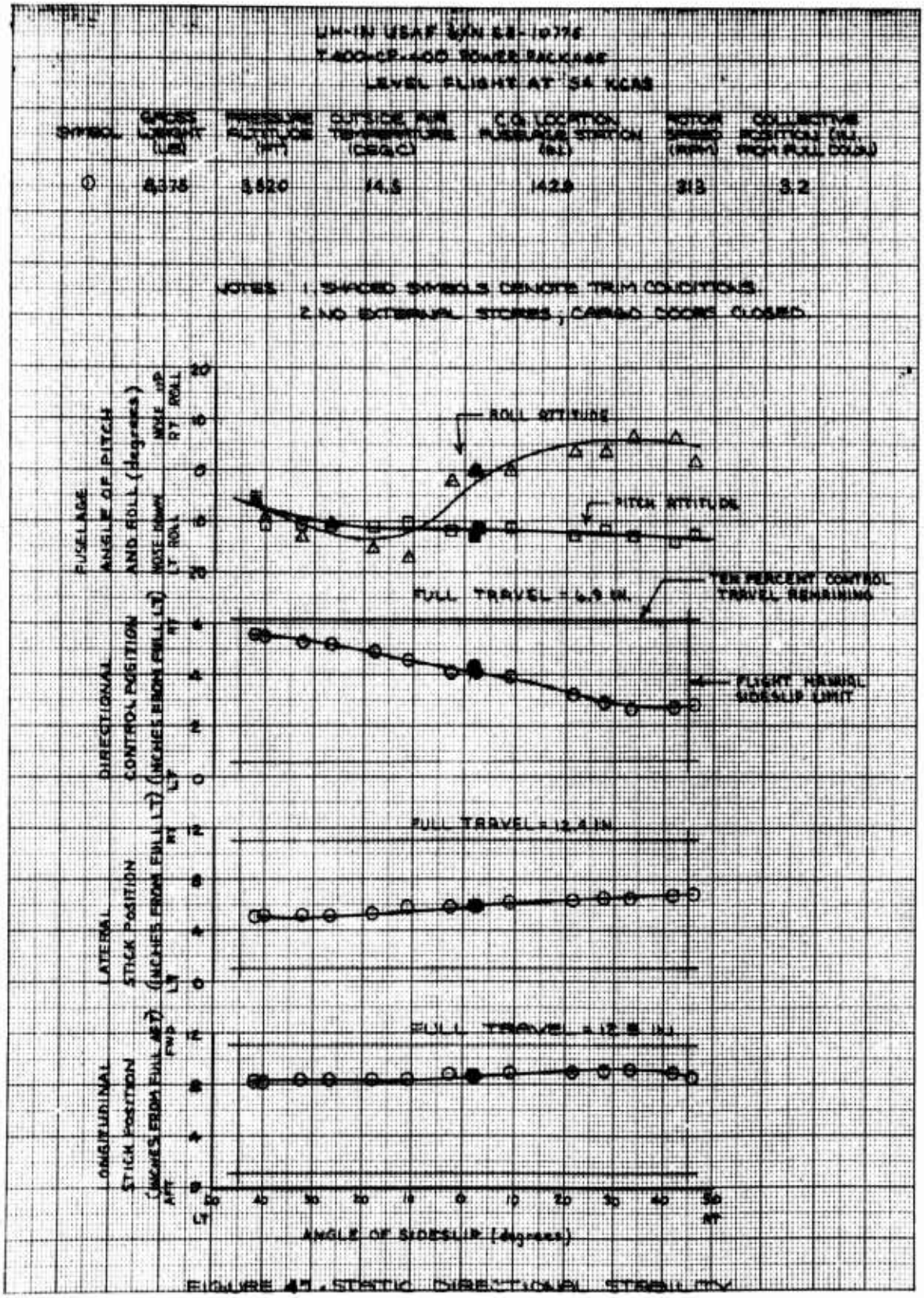


FIGURE 47. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 92 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9850	5870	6.0	131.9	312	3.7

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

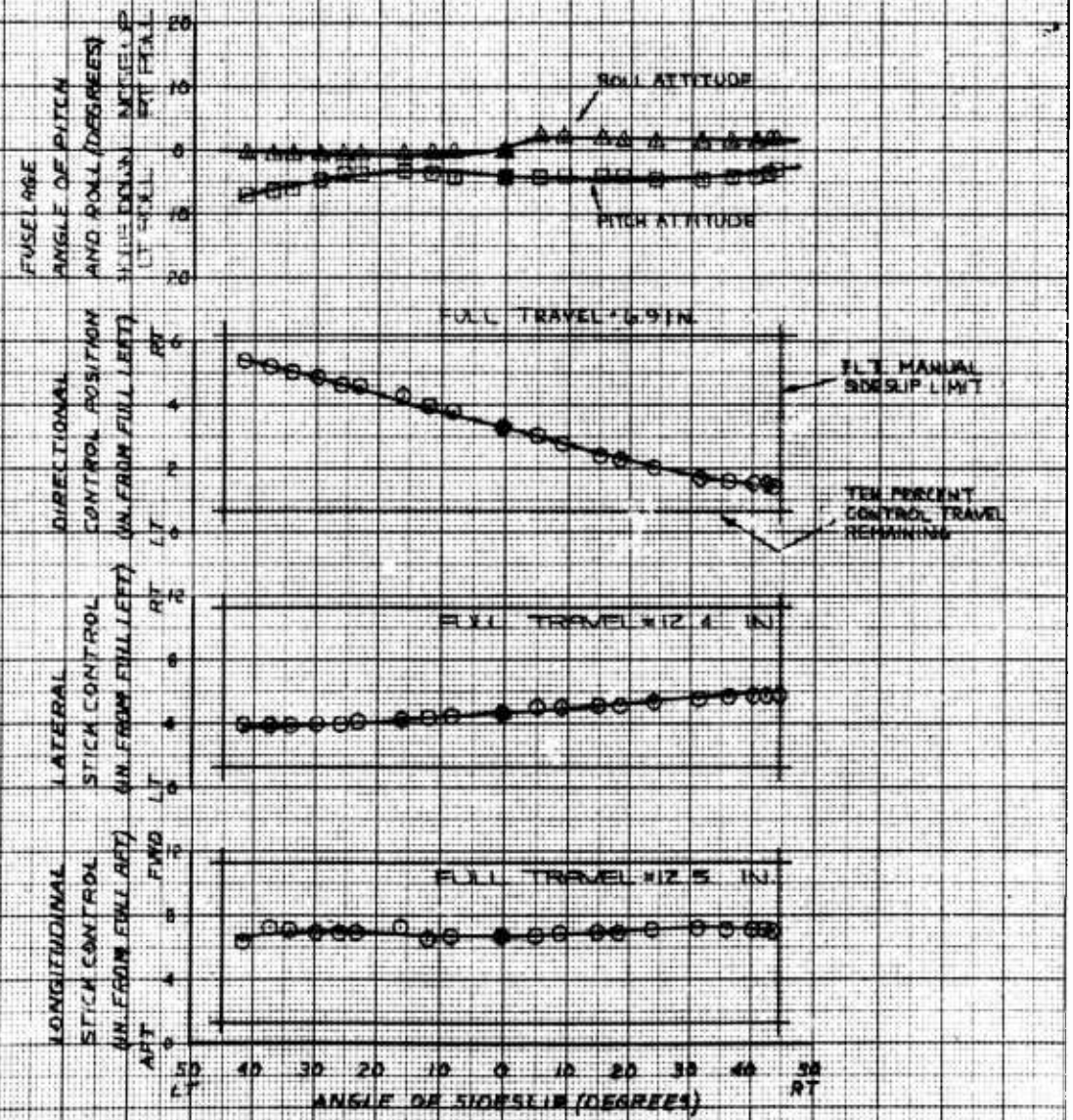


FIGURE 48. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10778
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 80 KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG. C.)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
O	9950	4910	3.5	192.8	312	3.9

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

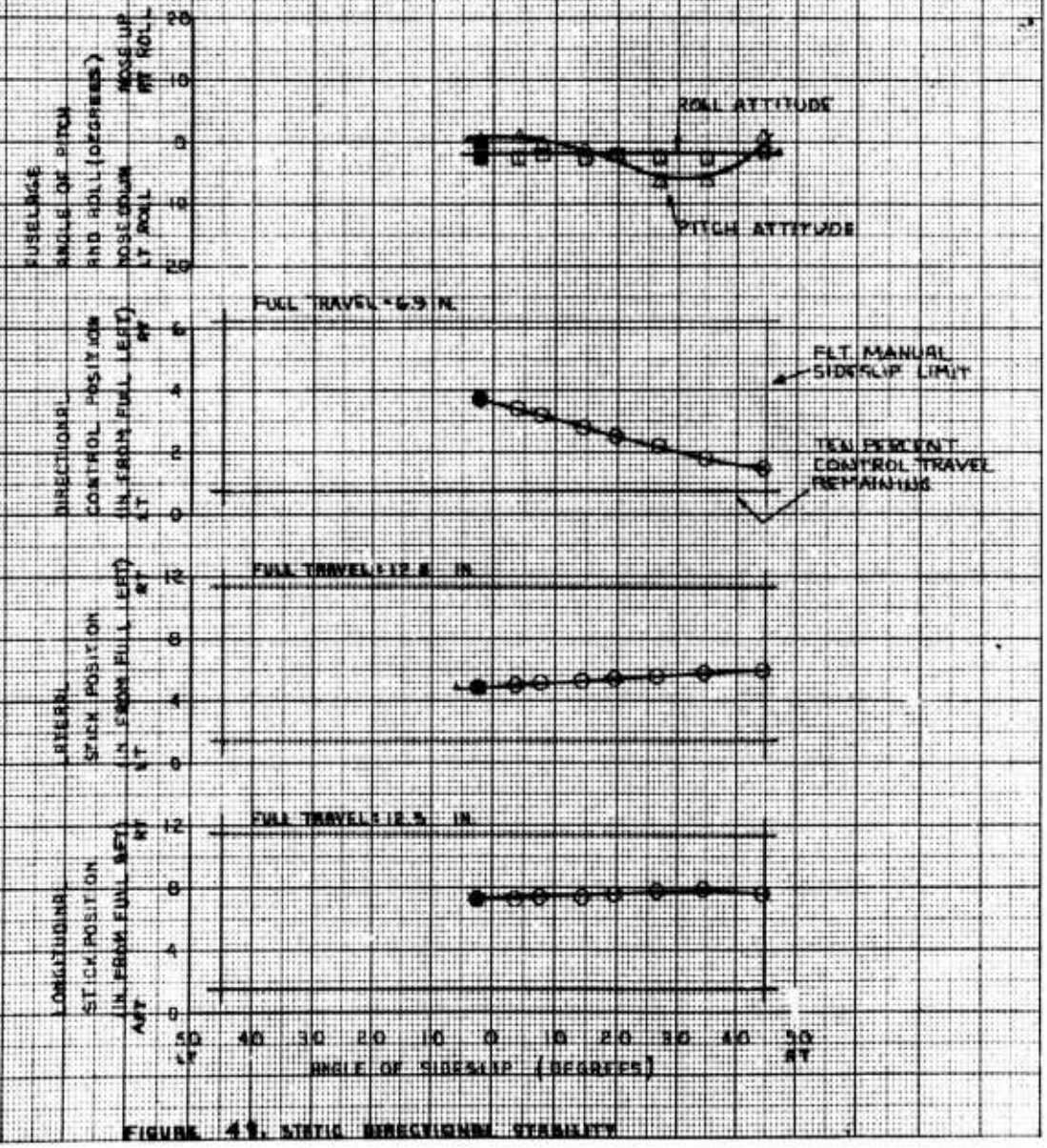


FIGURE 4-1. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10716

T700-GE-401 ENGINES

LEVEL FLIGHT AT 91 KCAS

SYMBOL	GROSS WEIGHT LBS	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9850	5,740	13.5	132.4	312	4.1

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN; LAU-68A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

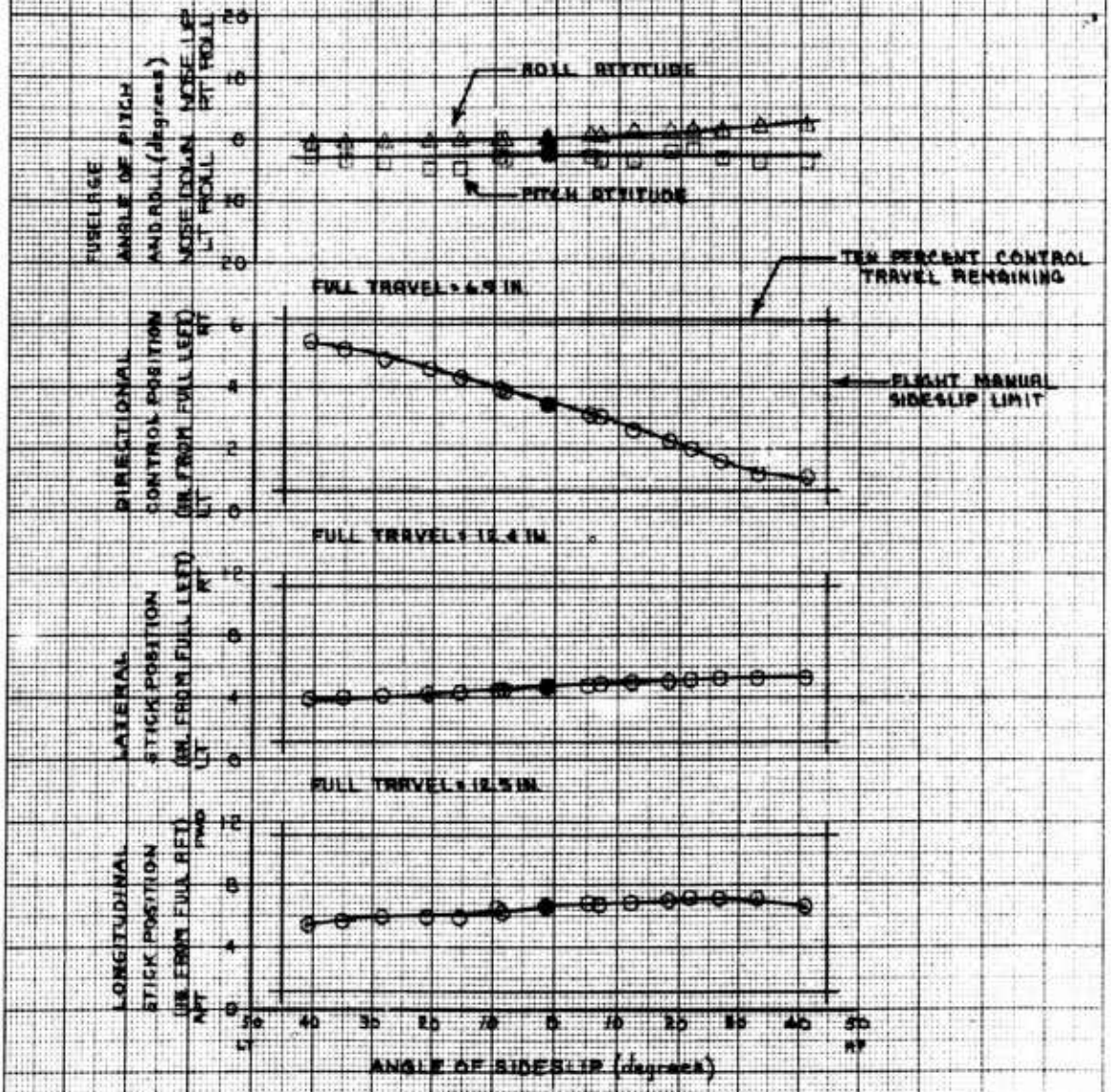


FIGURE 50. STATIC DIRECTIONAL STABILITY

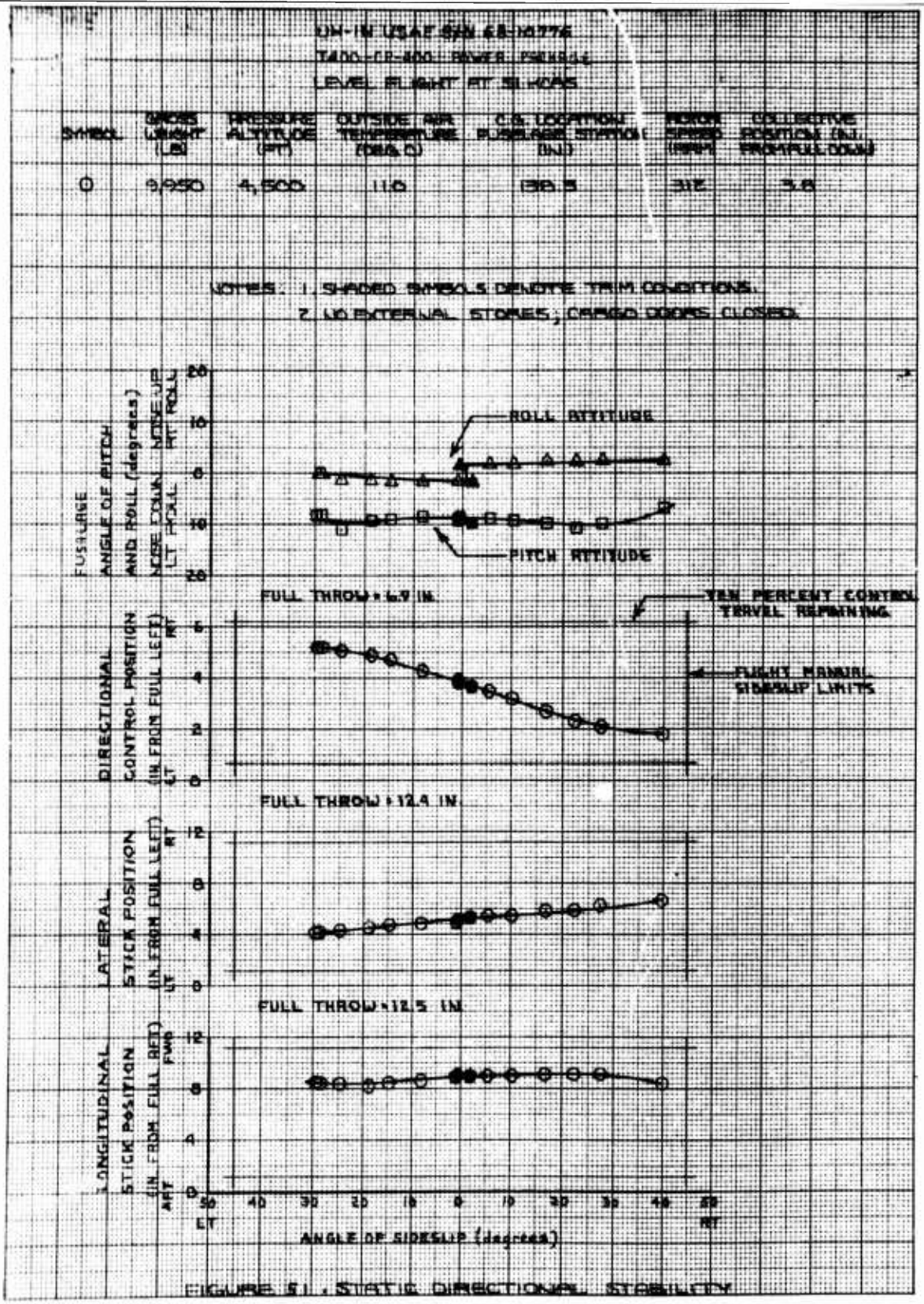


FIGURE 51. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10774
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 65 KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG. C.)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	10,800	5,390	21.0	189.4	314	4.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. CARGO DOORS OPEN; LAU 3/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-59 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

PITCH ATTITUDE ⊡
ROLL ATTITUDE △

FUSELAGE ANGLE OF PITCH AND ROLL (DEGREES) NOSE UP RT ROLL / NOSE DOWN LT ROLL

DIRECTIONAL CONTROL POSITION (IN. FROM FULL LEFT) RT / LT

FULL TRAVEL = 6.3 IN.

TEN PERCENT CONTROL TRAVEL REMAINING

FLIGHT MANUAL SIDESLIP LIMIT

LATERAL STICK POSITION (IN. FROM FULL LEFT) RT / LT

FULL TRAVEL = 16.4 IN.

LONGITUDINAL STICK POSITION (IN. FROM FULL AFT) AFT / FWD

FULL TRAVEL = 12.5 IN.

ANGLE OF SIDESLIP (DEGREES) LT / RT

FIGURE 42. STATIC DIRECTIONAL STABILITY

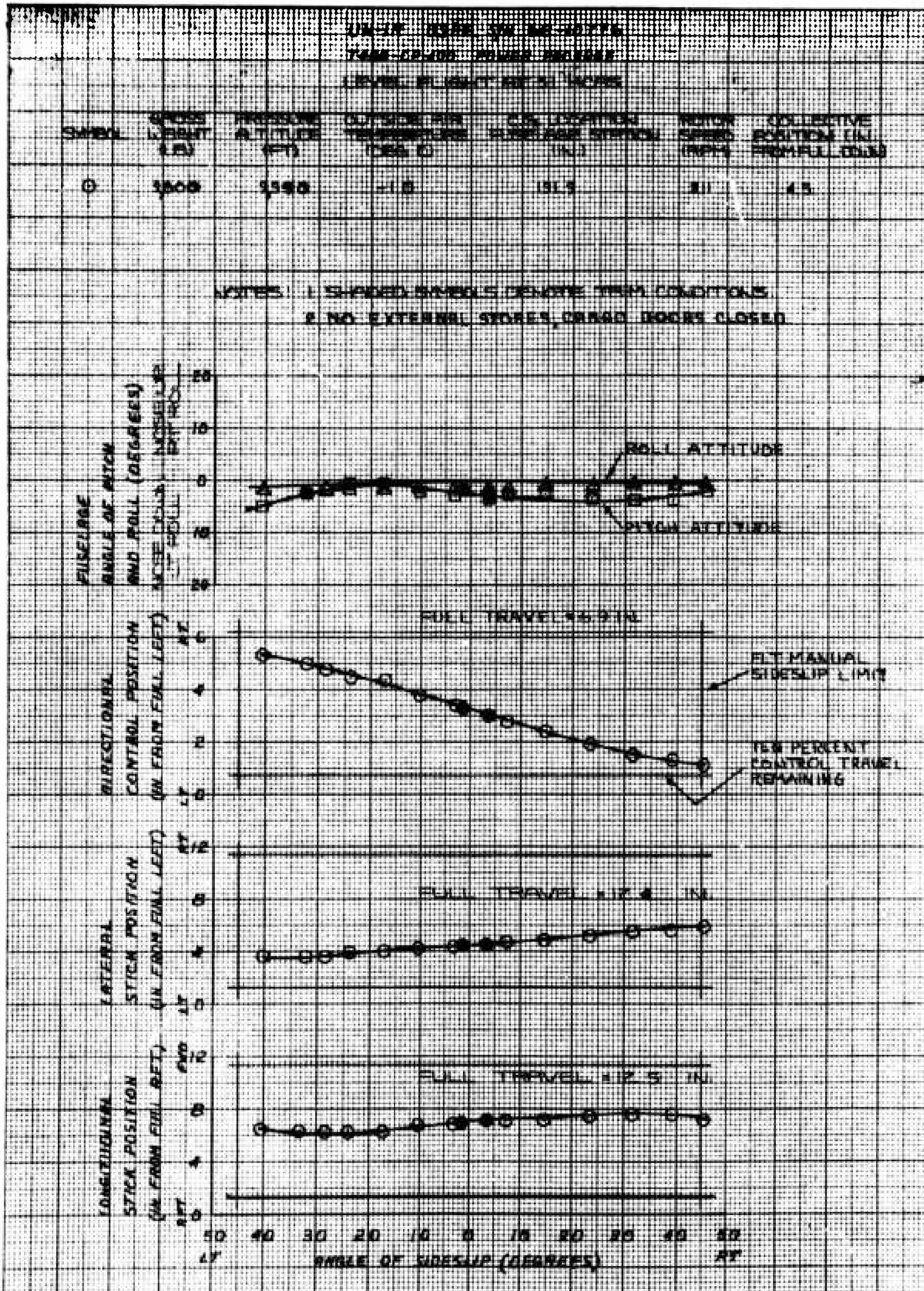


FIGURE 53. STATIC DIRECTIONAL STABILITY

UH-1N USAF SN 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 55 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG. C)	CG LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9725	8090	1.5	373.4	312.0	4.32

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS
2. NO EXTERNAL STORES, CARGO DOORS CLOSED

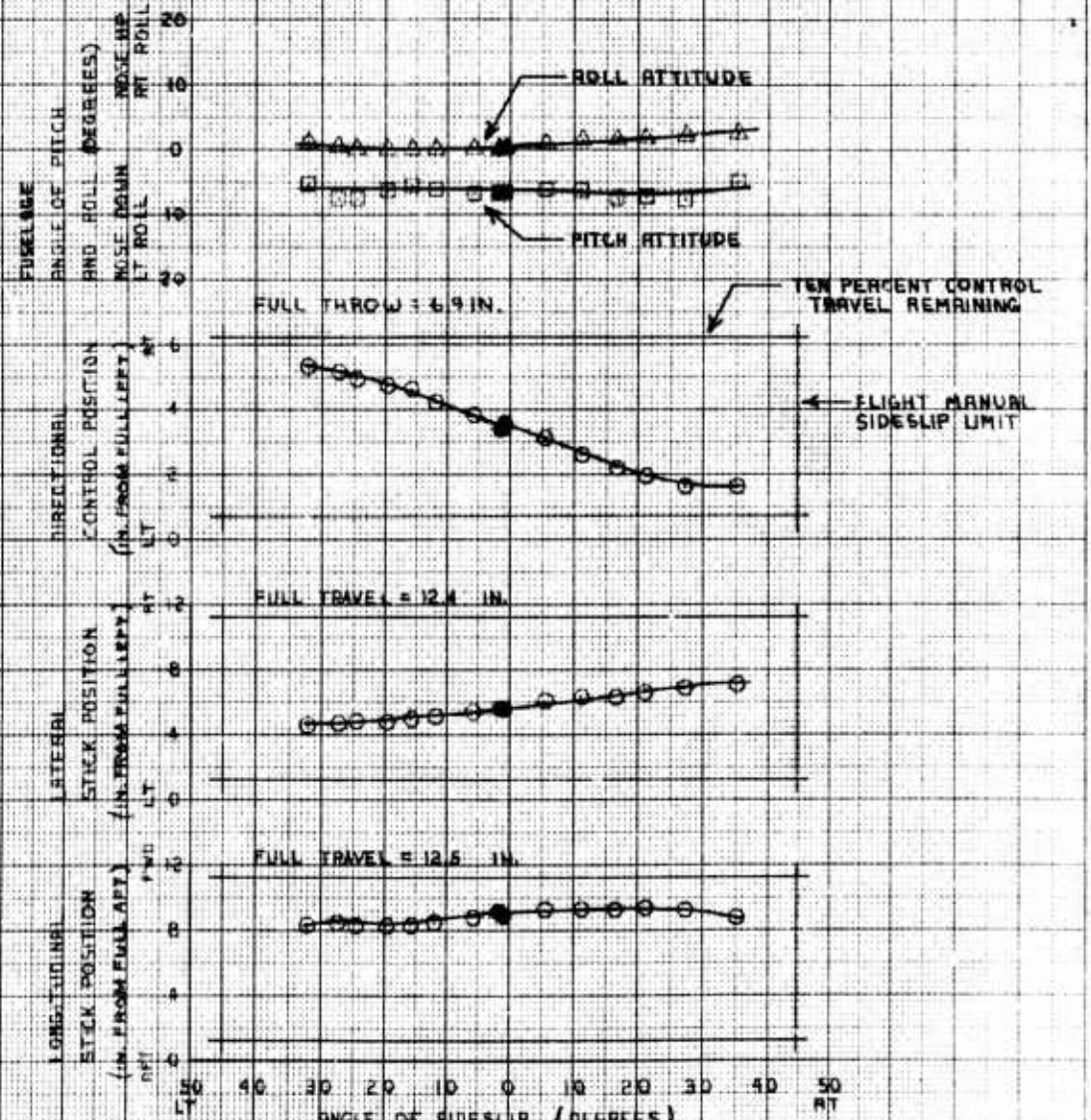


FIGURE 54. STATIC DIRECTIONAL STABILITY

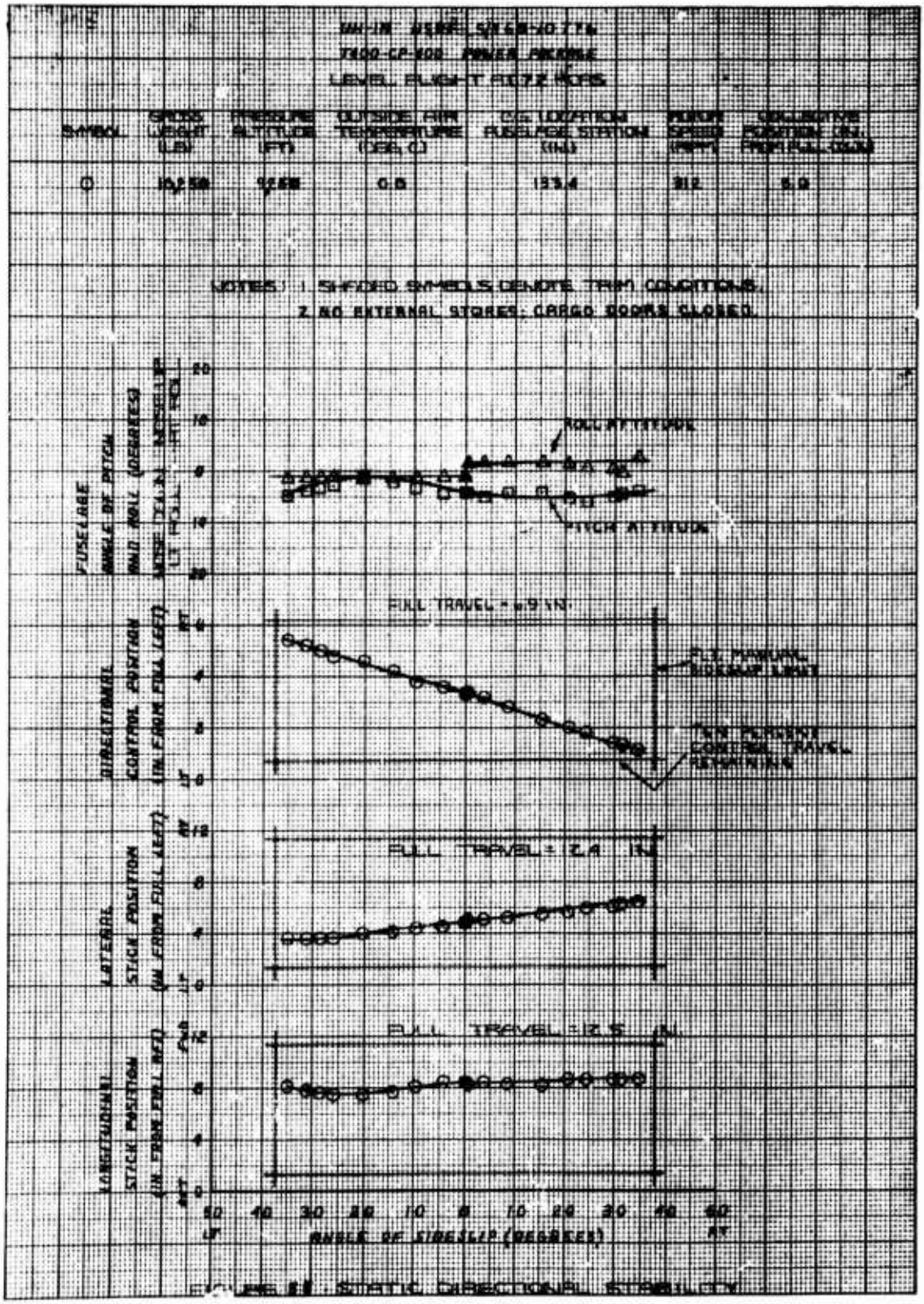


FIG. 8.8 STATIC DIRECTIONAL STABILITY

UH-1N (USAF S/N 68-10776)
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 77 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG. C)	C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,100	8,210	13.0	138.9	313.0	5.0

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED

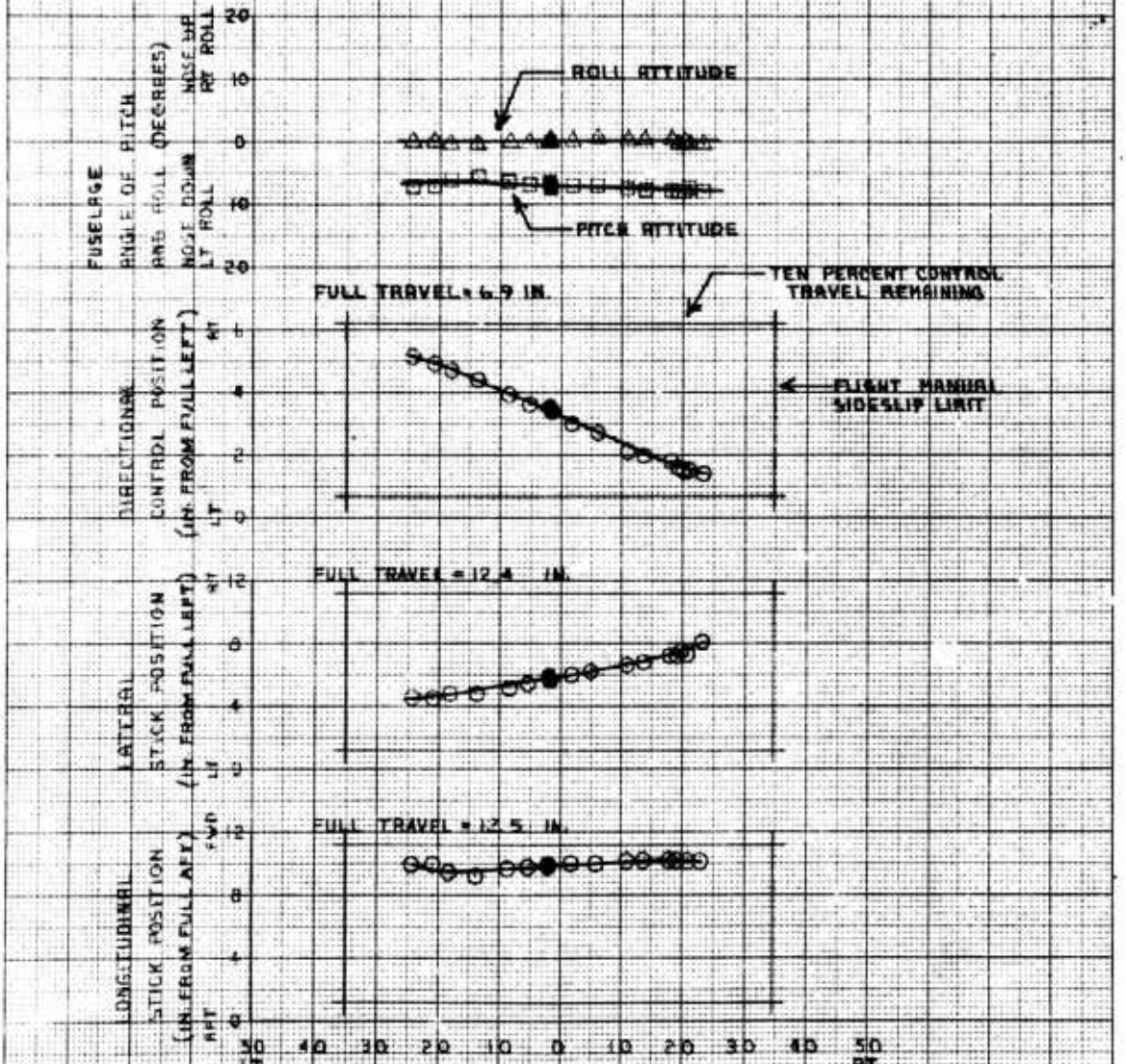


FIGURE 56. STATIC DIRECTIONAL STABILITY

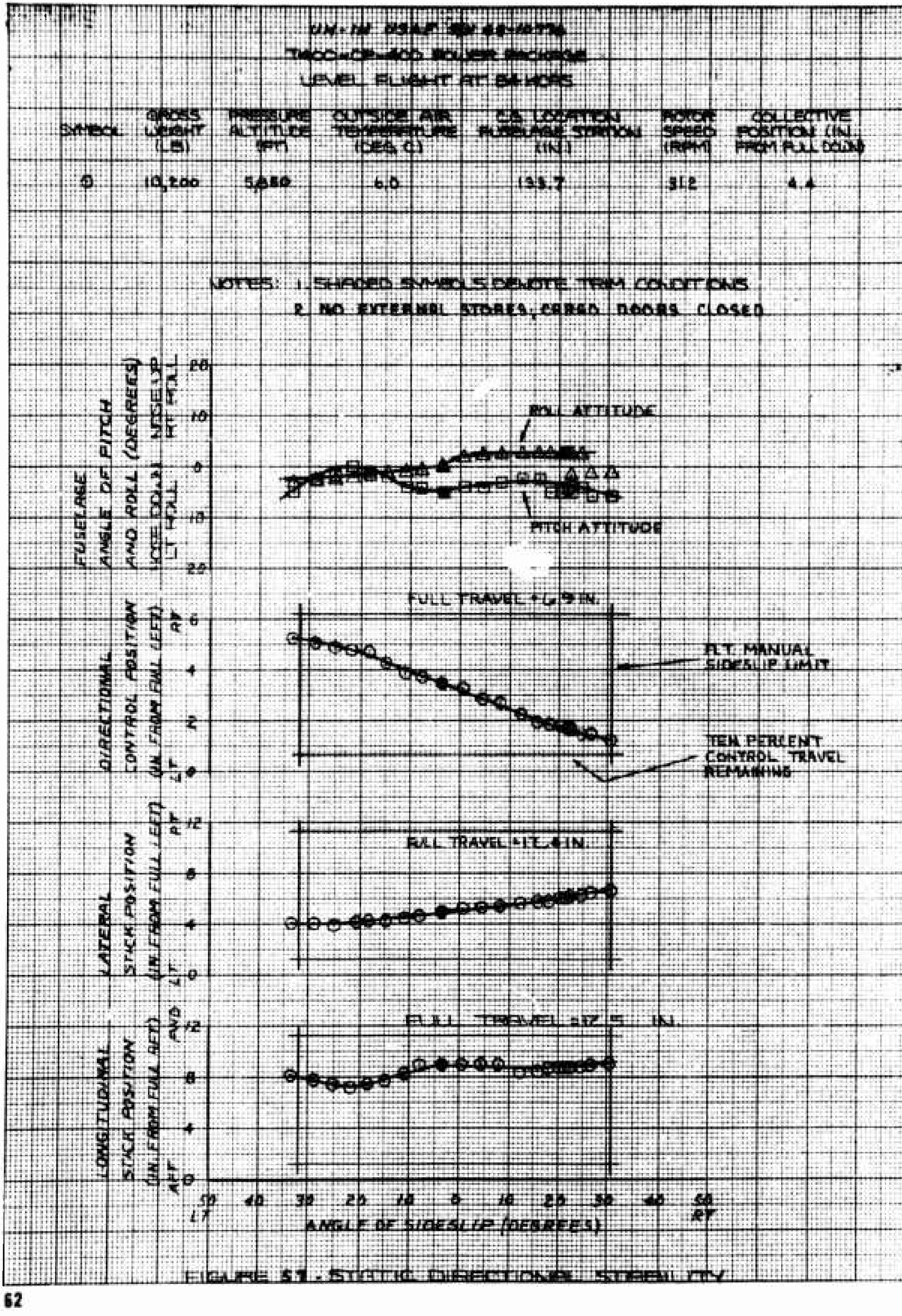


FIGURE 57 - STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PLANT
LEVEL FLIGHT AT AM MSL

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,175	4,930	4.5	135.6	312	4.2

NOTES: 1. SHADED SYMBOL DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

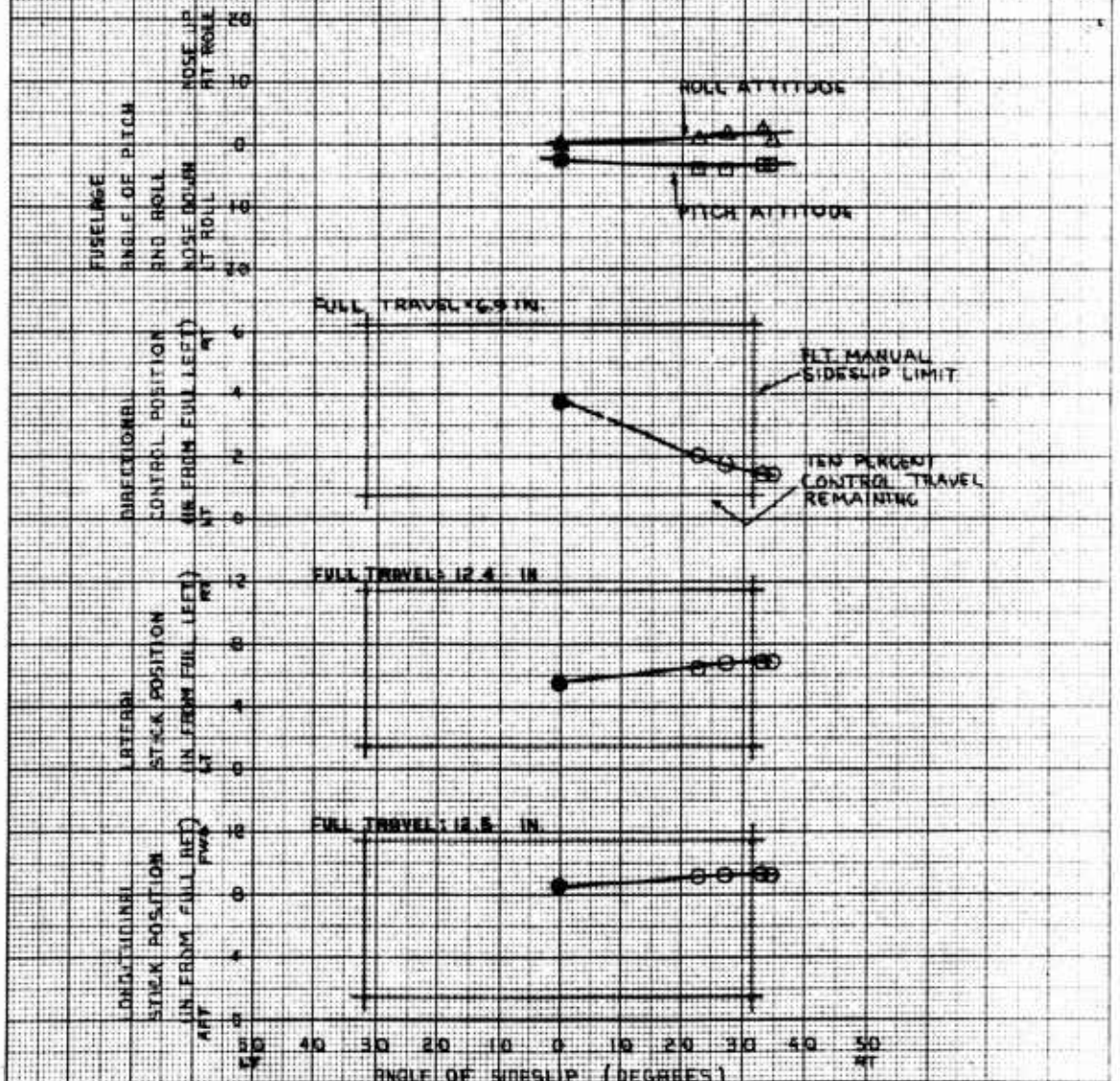


FIGURE 5-8. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10778

T400-CP-400 POWER PACKAGE

LEVEL FLIGHT AT 88 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊖	10,275	4,590	17.0	133.4	312	4.6

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS

2. NO EXTERNAL STORES, CARGO DOORS CLOSED

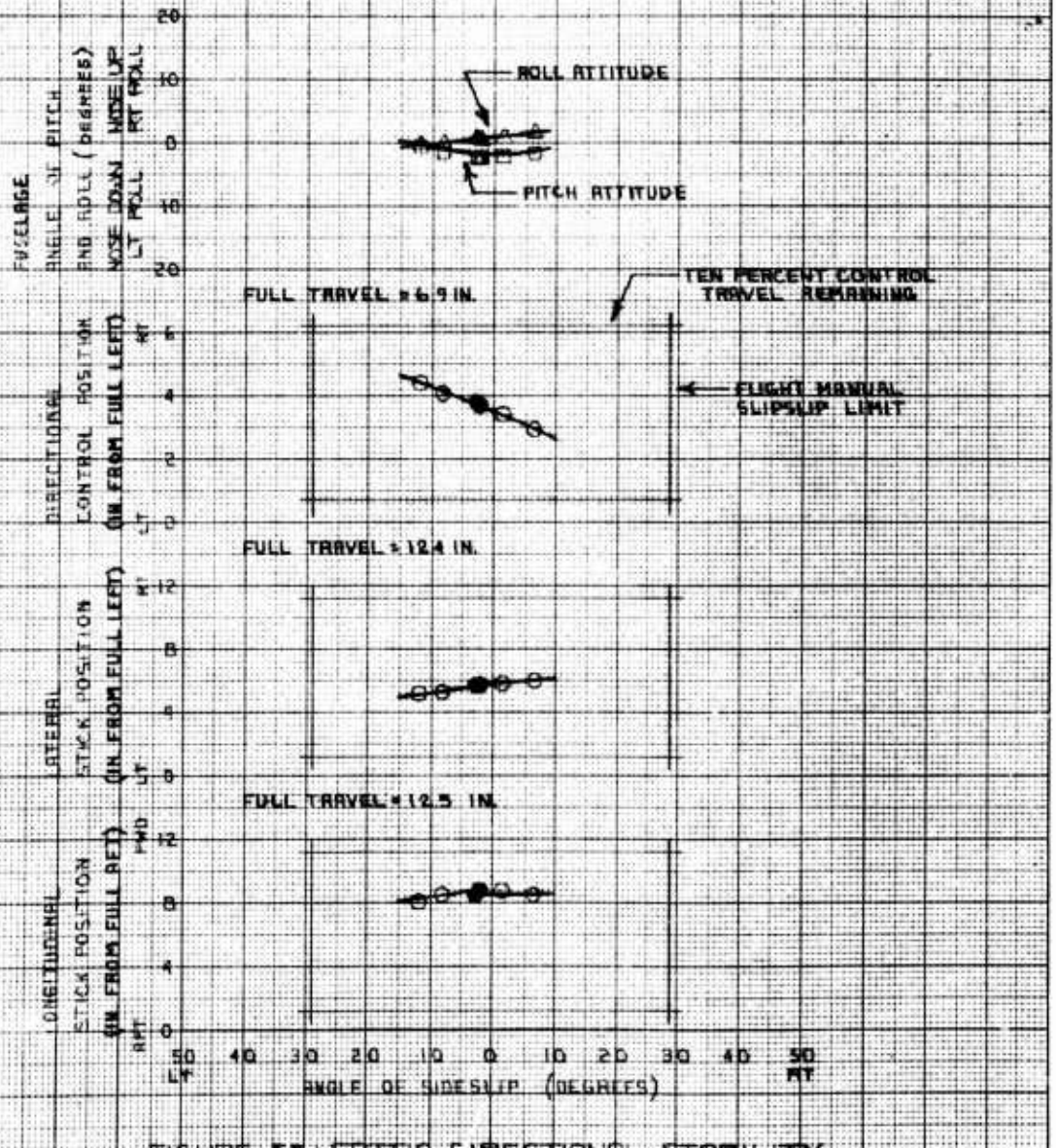


FIGURE 64. STATIC DIRECTIONAL STABILITY

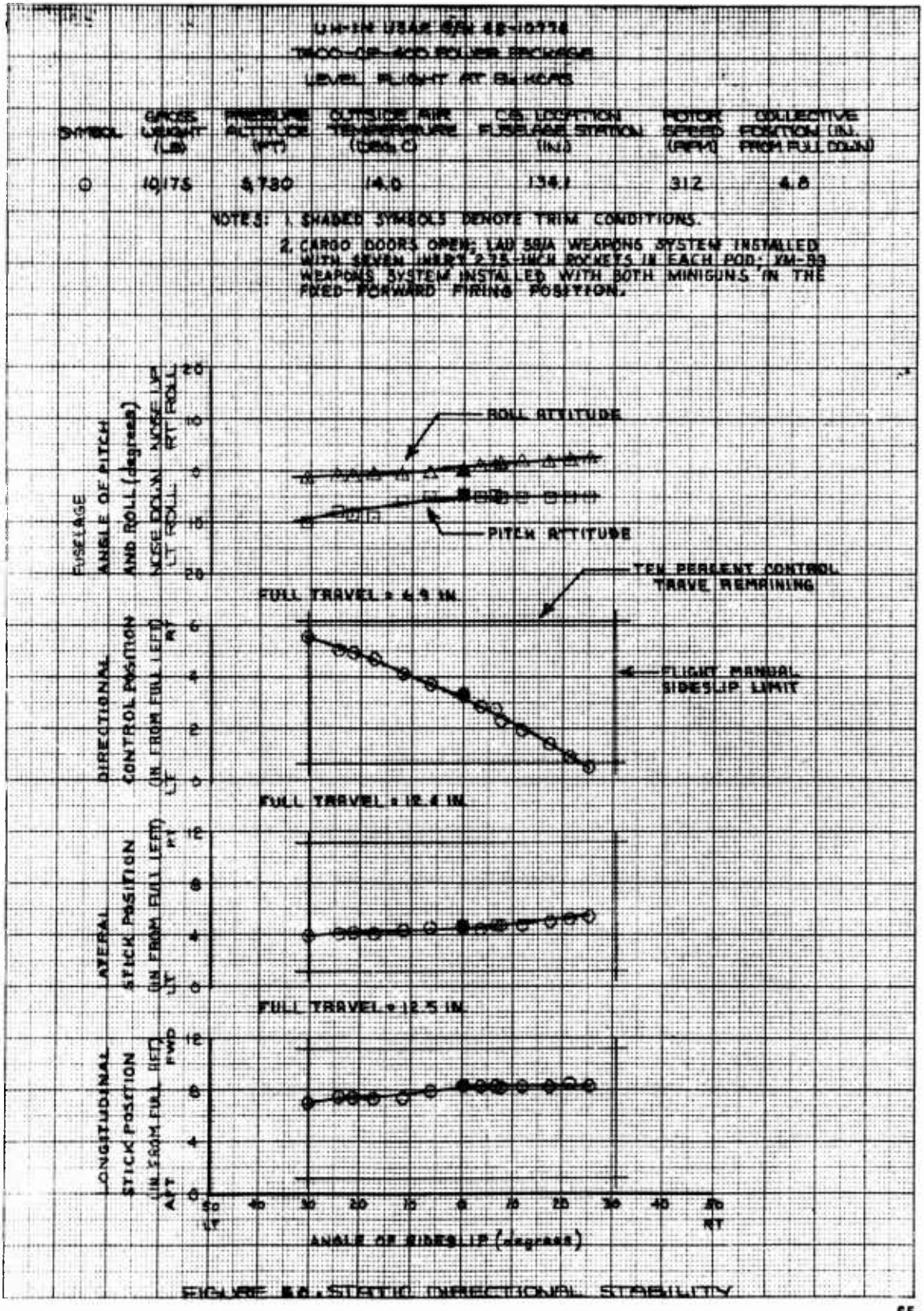


FIGURE 5-8. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 84 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	9,250	4,550	11.5	139.4	312	4.3

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES ; CARGO DOORS CLOSED

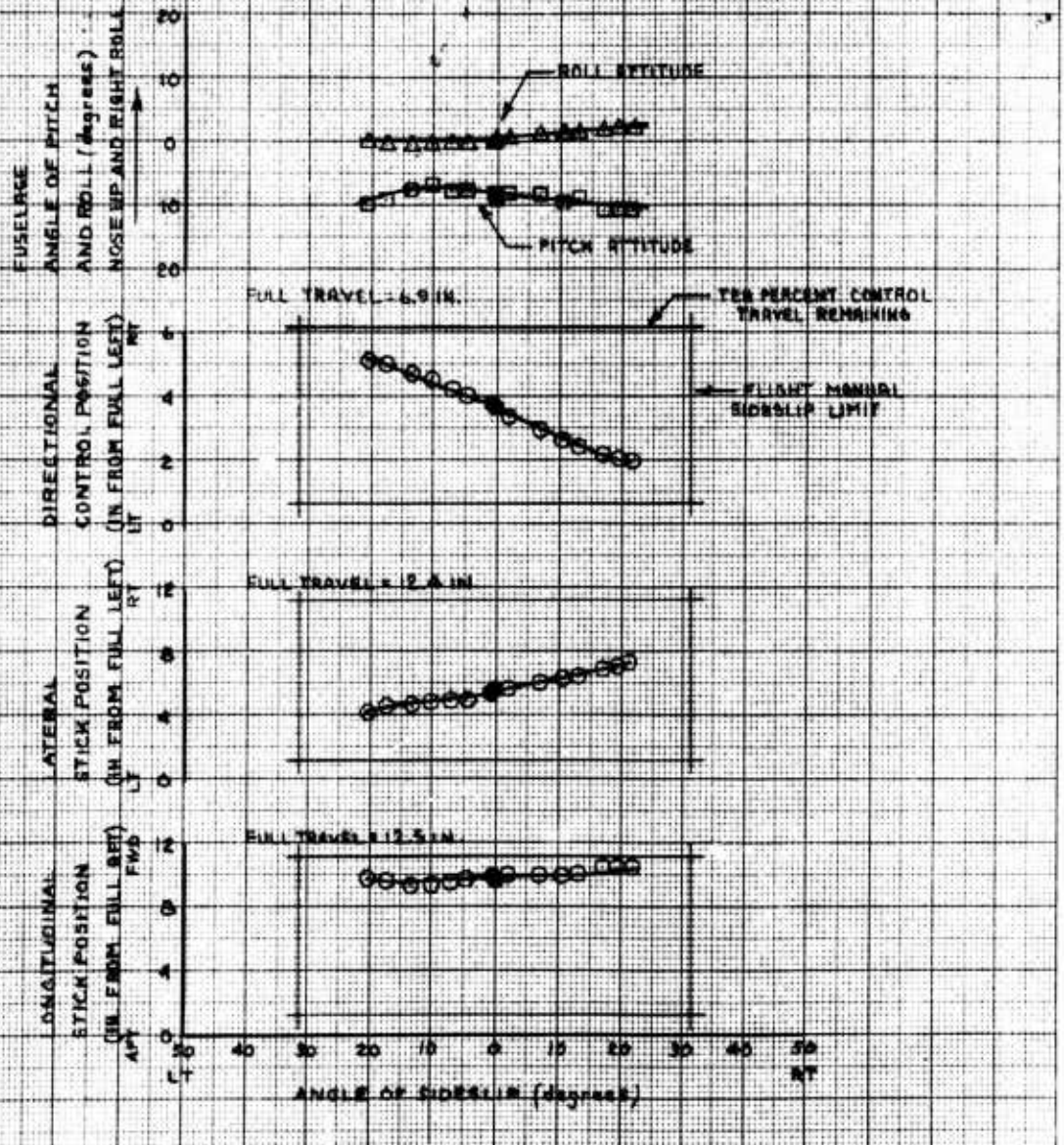


FIGURE 41. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10736
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 85 KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	9,400	3250	21.0	139.9	313	4.9

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN; XM-156 WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-23 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

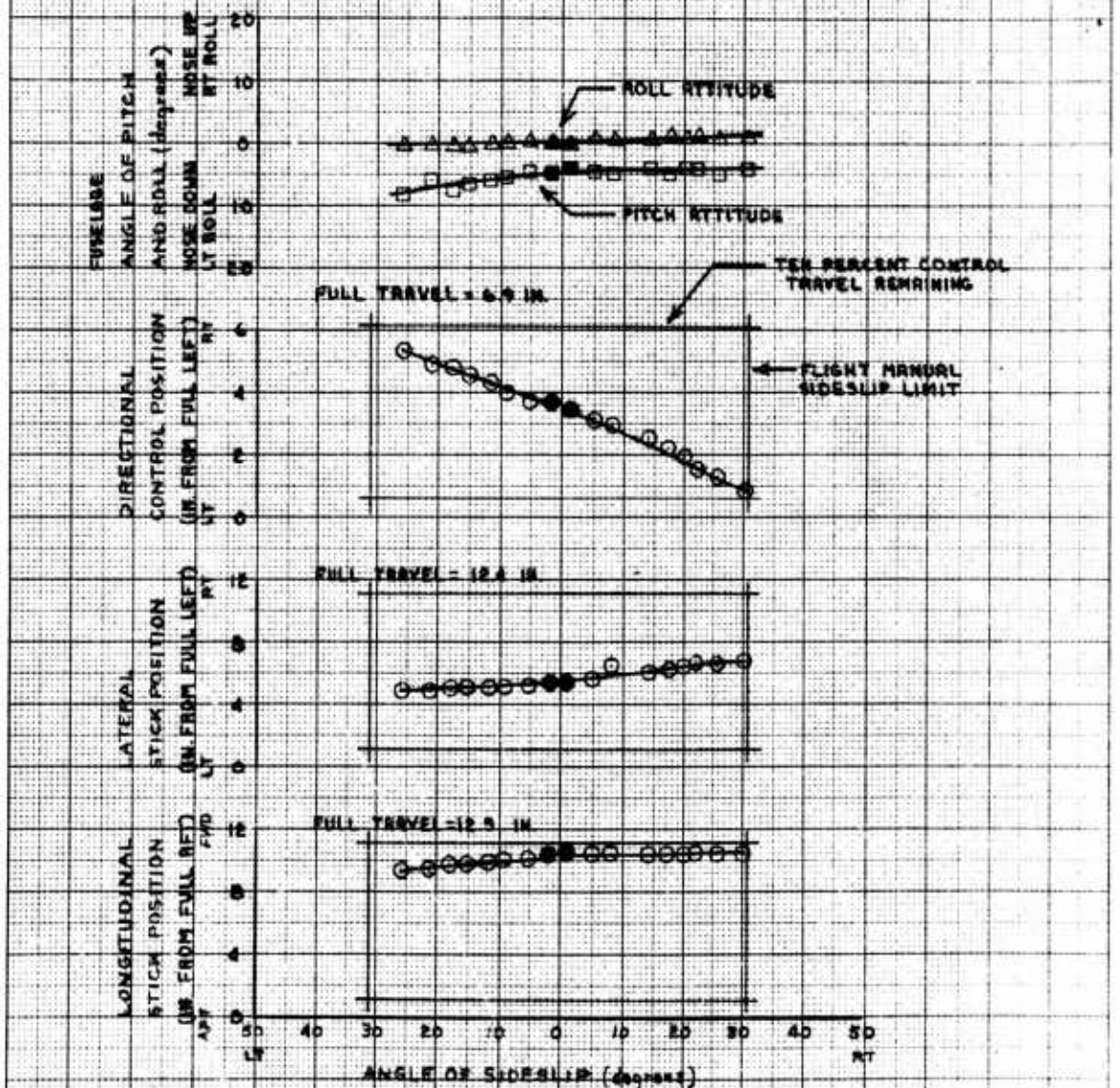


FIGURE 6-2. STATIC DIRECTIONAL STABILITY

UH-1M USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 80 KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	9300	8210	12.5	138.4	313.0	5.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED

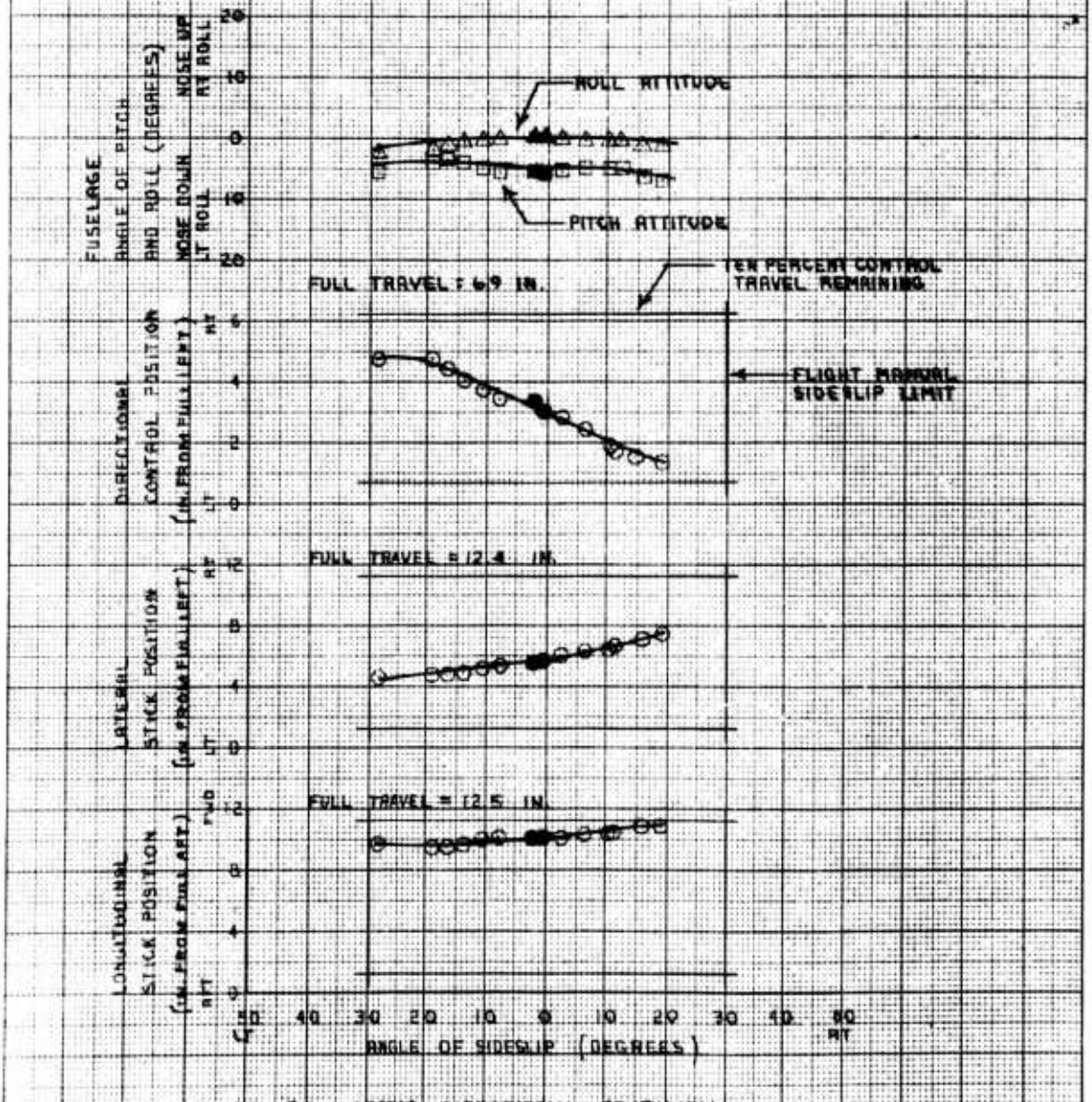


FIGURE 68. STATIC DIRECTIONAL STABILITY

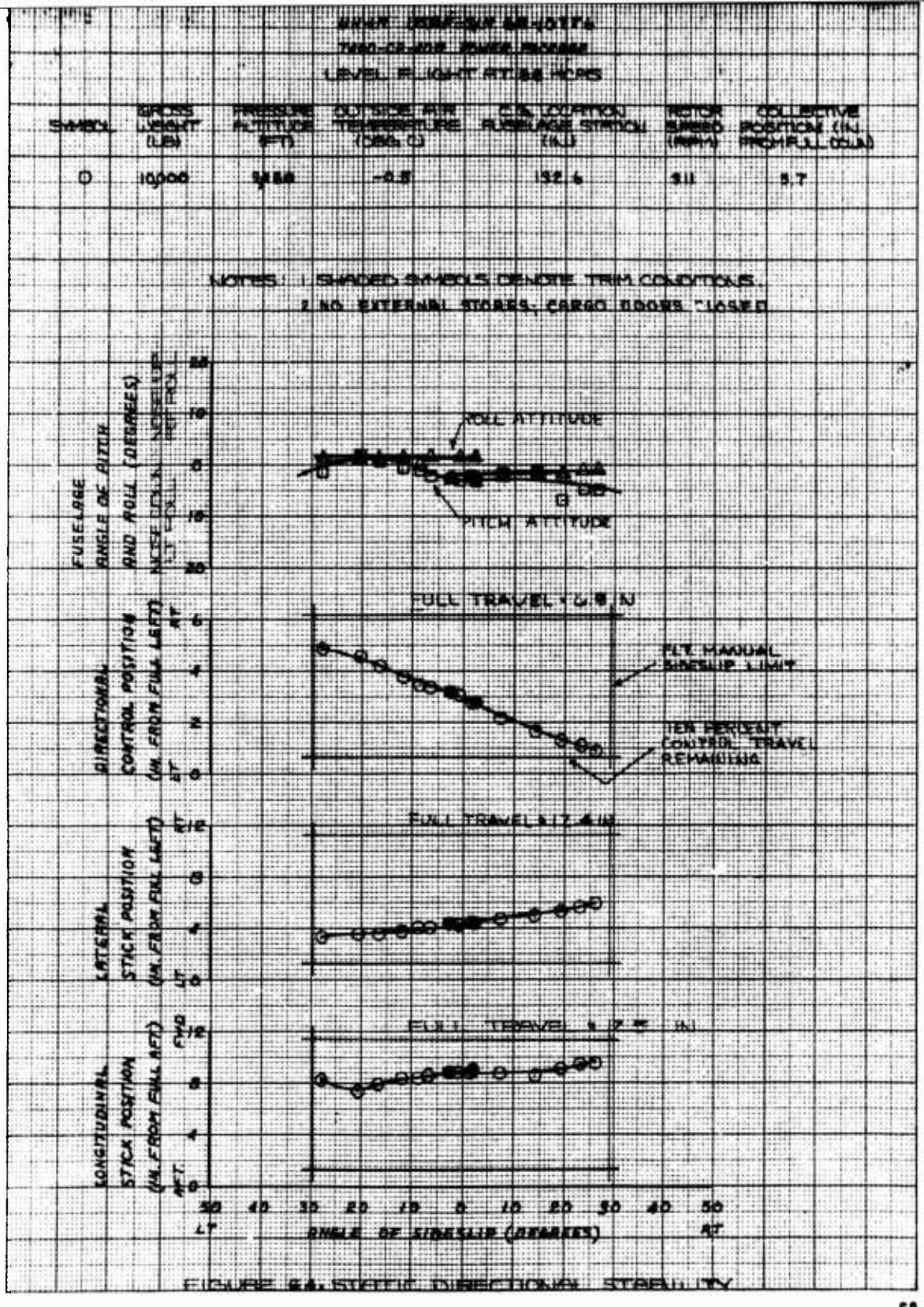


FIGURE 64. STATIC DIRECTIONAL STABILITY

UH-1N V&A F S/N 68-10918

T400-CP-400 POWER PLANT

LEVEL FLIGHT AT 94 KCAS

SYMBOL	GROSS WEIGHT (LBS)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	8575	3690	16.0	143.6	313	4.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

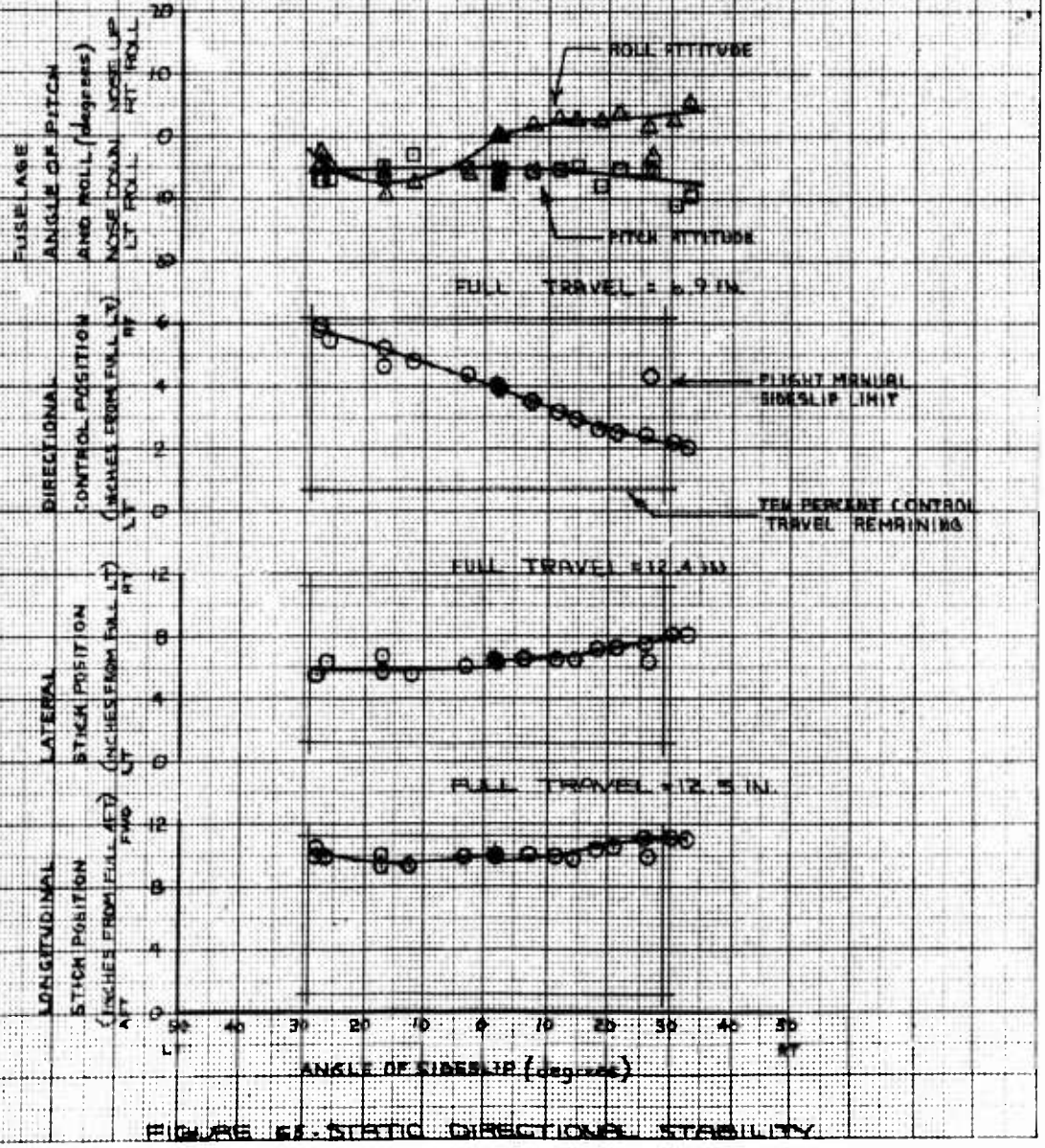


FIGURE 62. STATIC DIRECTIONAL STABILITY

UH-1M USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 105 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	10000	5410	7.0	132.2	312	5.3

NOTES: 1 SHADED SYMBOLS DENOTE TRIM CONDITIONS
2 NO EXTERNAL STORES, CARGO DOORS CLOSED.

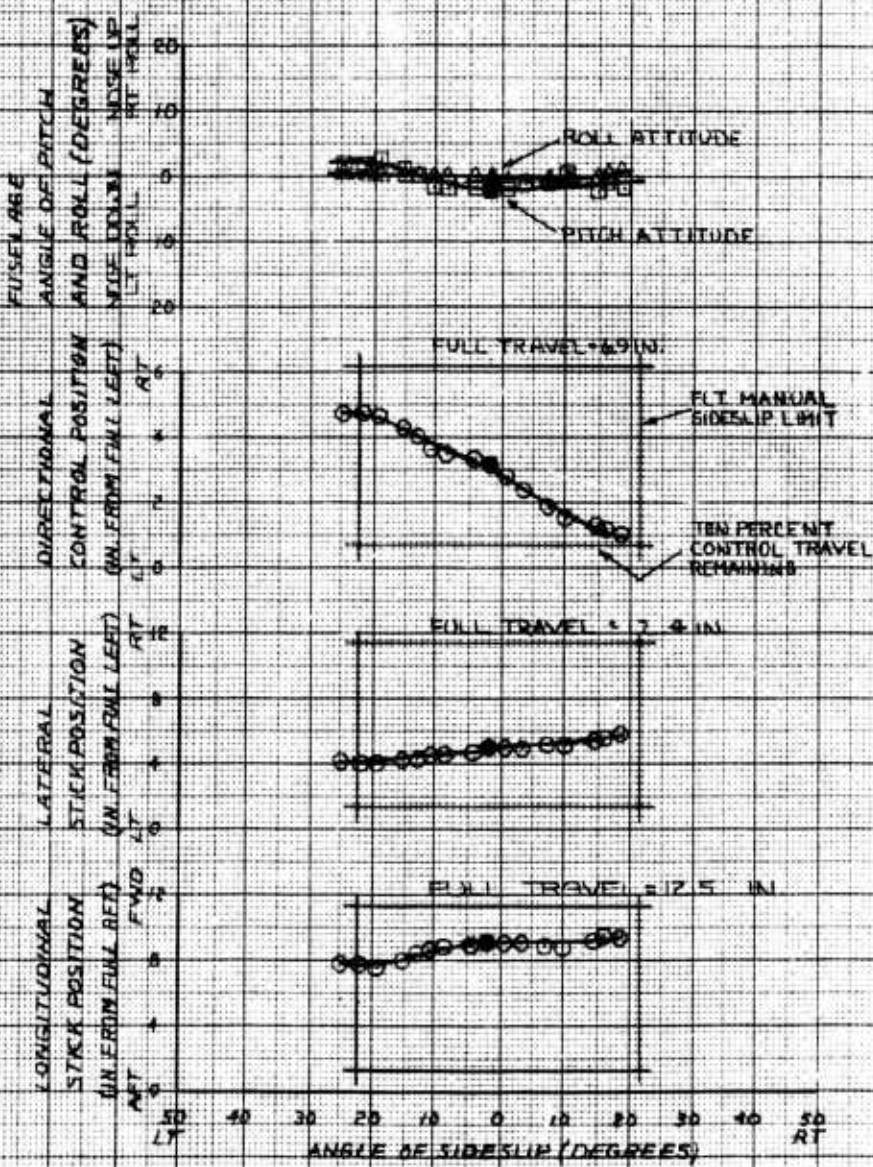


FIGURE 66. STATIC DIRECTIONAL STABILITY

UH-1N (EMP) BUR 68-10778

TWCC-CR-400 ROUGH ENGINE

LEVEL FLIGHT AT 104 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,025	4,120	14.6	132.6	312	5.8

NOTES: 1. SHADE SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN; LAU 59/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-93 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

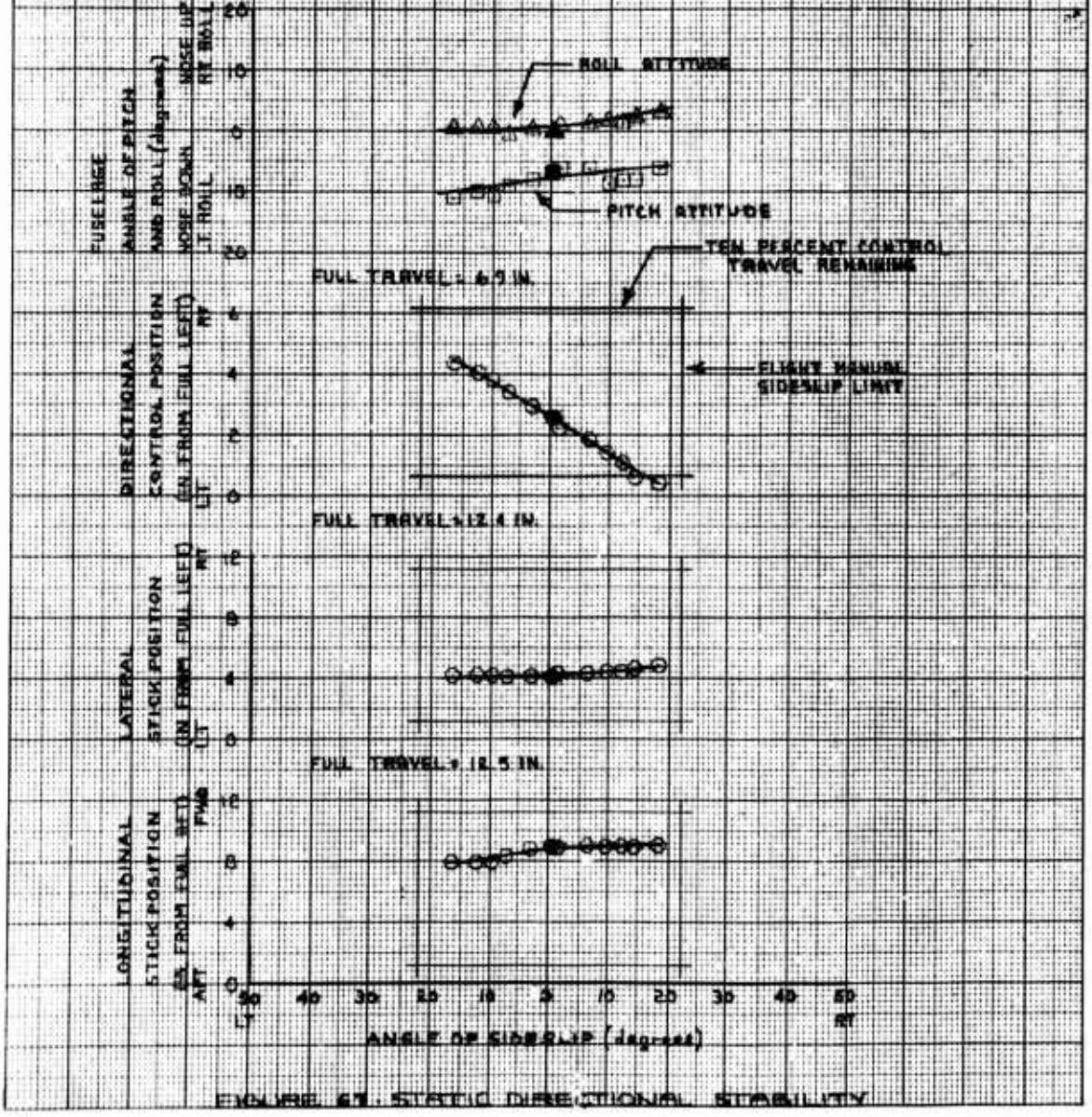


FIGURE 67. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776

T400-CP-400 POWER PLANT

LEVEL FLIGHT AT 104 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,075	4,280	11.9	138.8	312	5.2

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

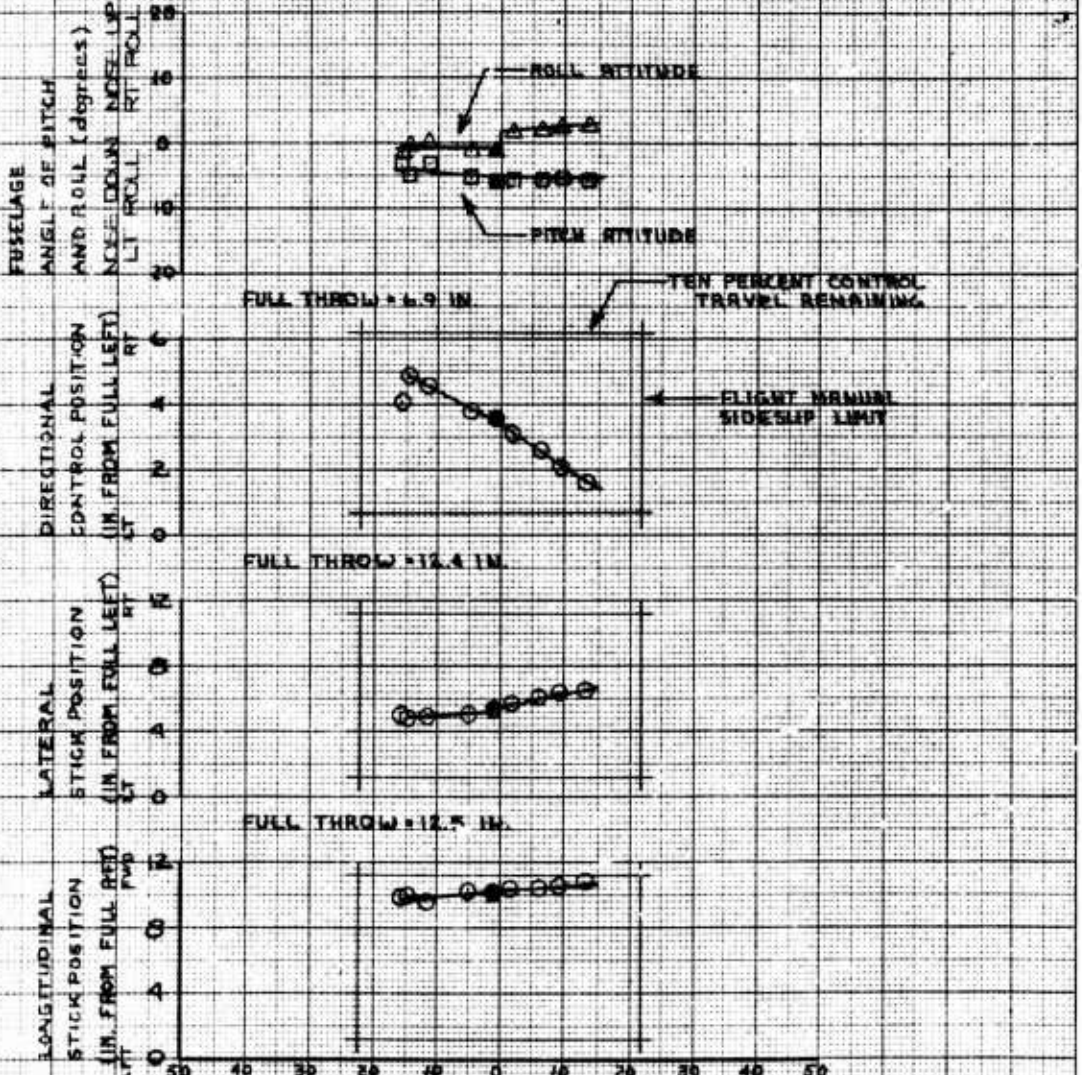


FIGURE 6A. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 105 KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG. C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	10,175	5,550	14.0	153.2	315	5.7

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN; LAU 59/A WEAPONS SYSTEM INSTALLED WITH SEVEN (MK) 2.75-INCH ROCKETS IN EACH POD; XM-59 WEAPONS SYSTEM INSTALLED WITH BOTH MINI-GUNS IN THE FIXED-FORWARD FIRING POSITION.

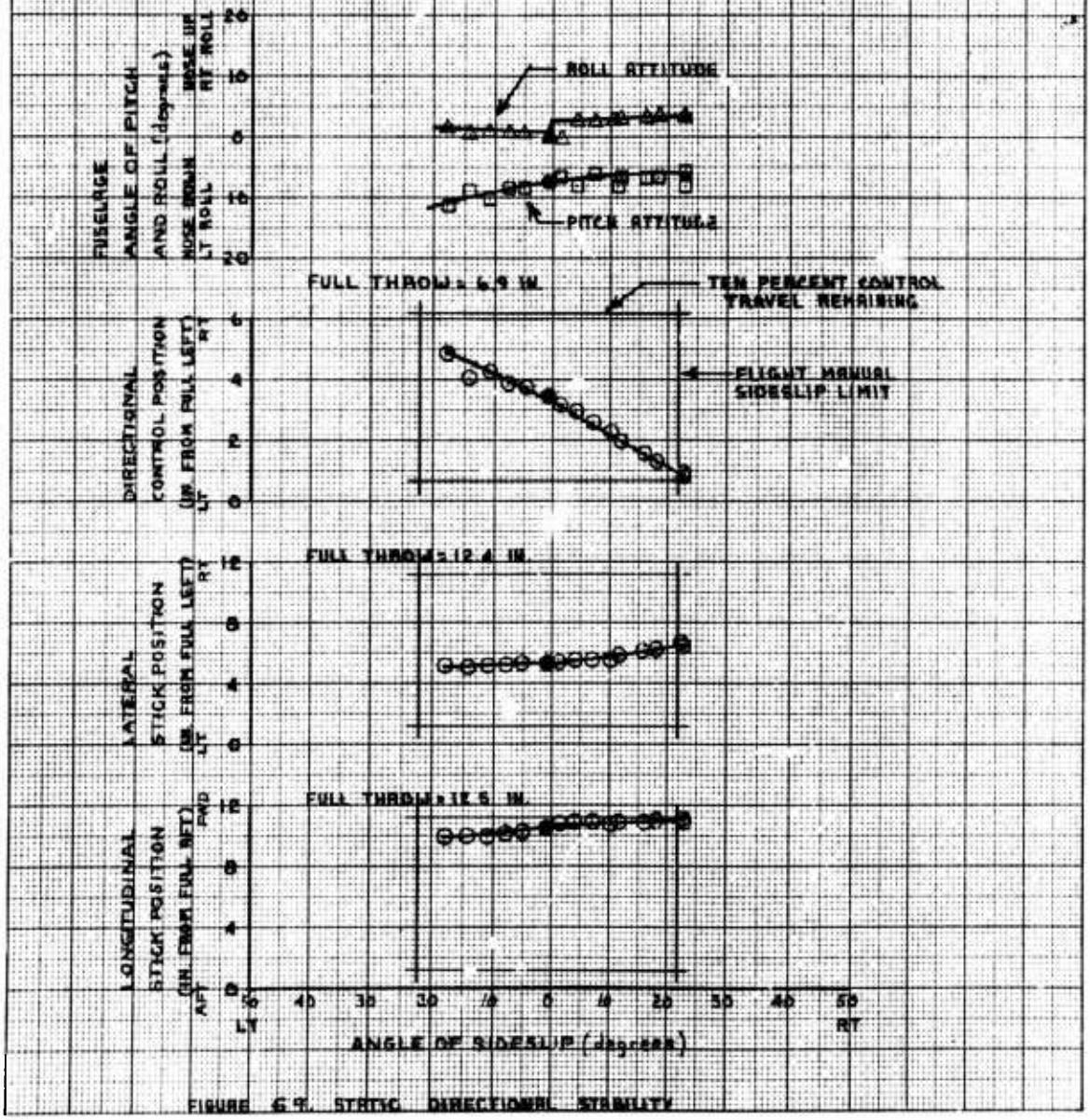


FIGURE 6-9. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LEVEL FLIGHT AT 117 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	8,475	4,170	16.5	143.2	313	5.5

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES, CARGO DOORS CLOSED.

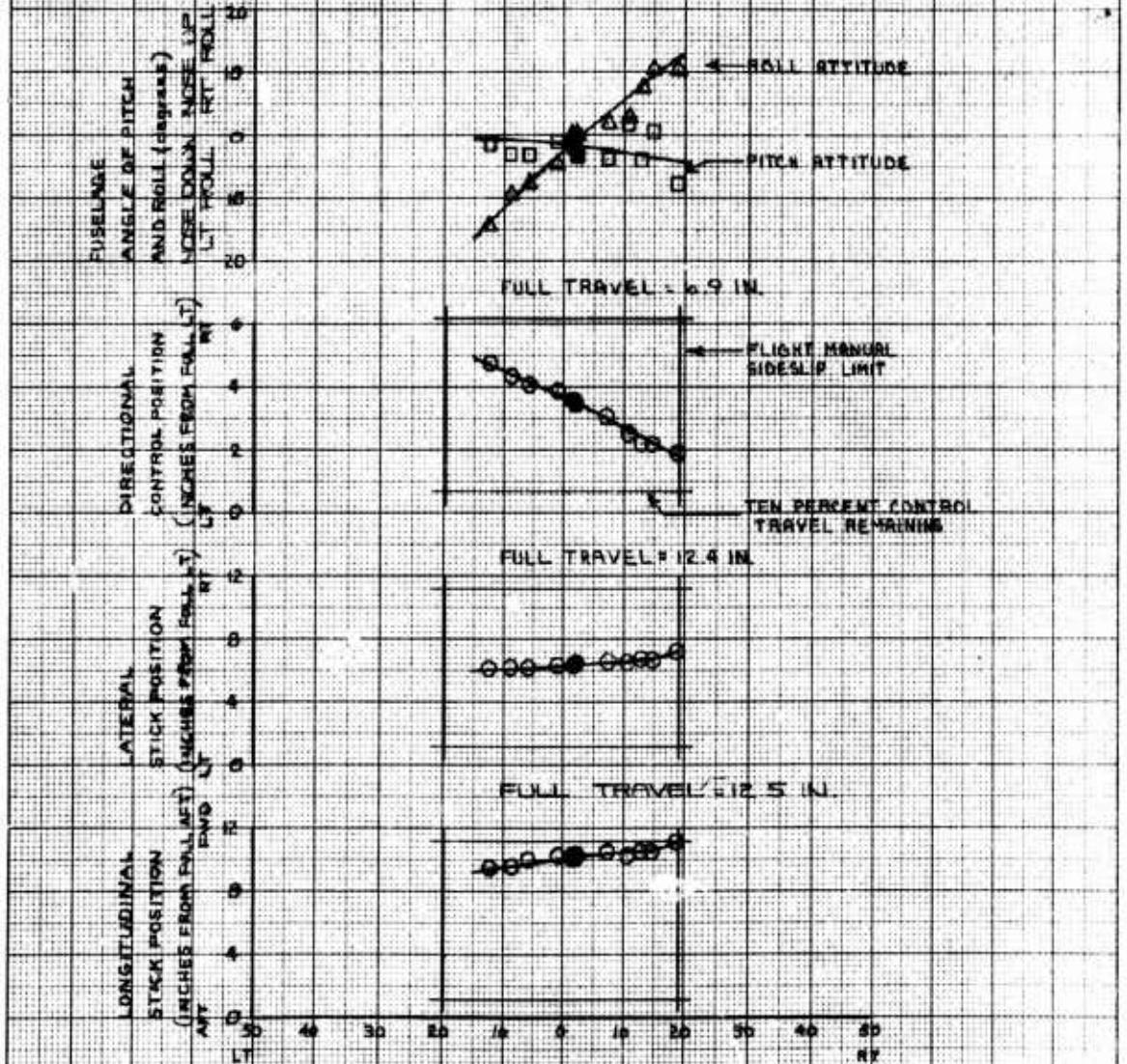


FIGURE 7.8.5.5E DIRECTIONAL STABILITY

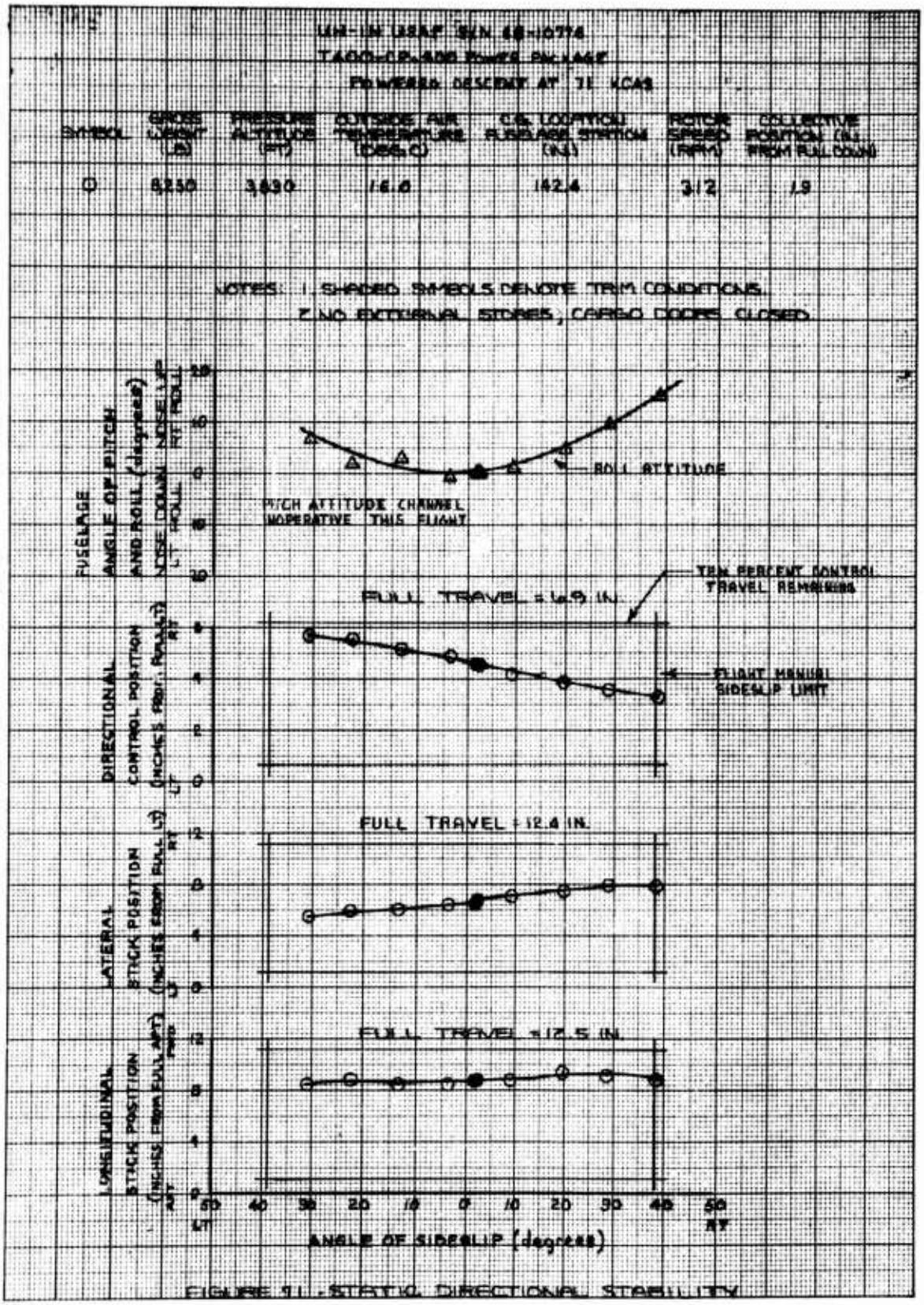


FIGURE 91. - STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10926
T400-CP-400 POWER PACKAGE
AUTOROTATION AT 64 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
⊙	9025	8800	4.0	183.8	323	0.9

NOTES 1 SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2 NO EXTERNAL STORES, CARGO DOORS CLOSED.

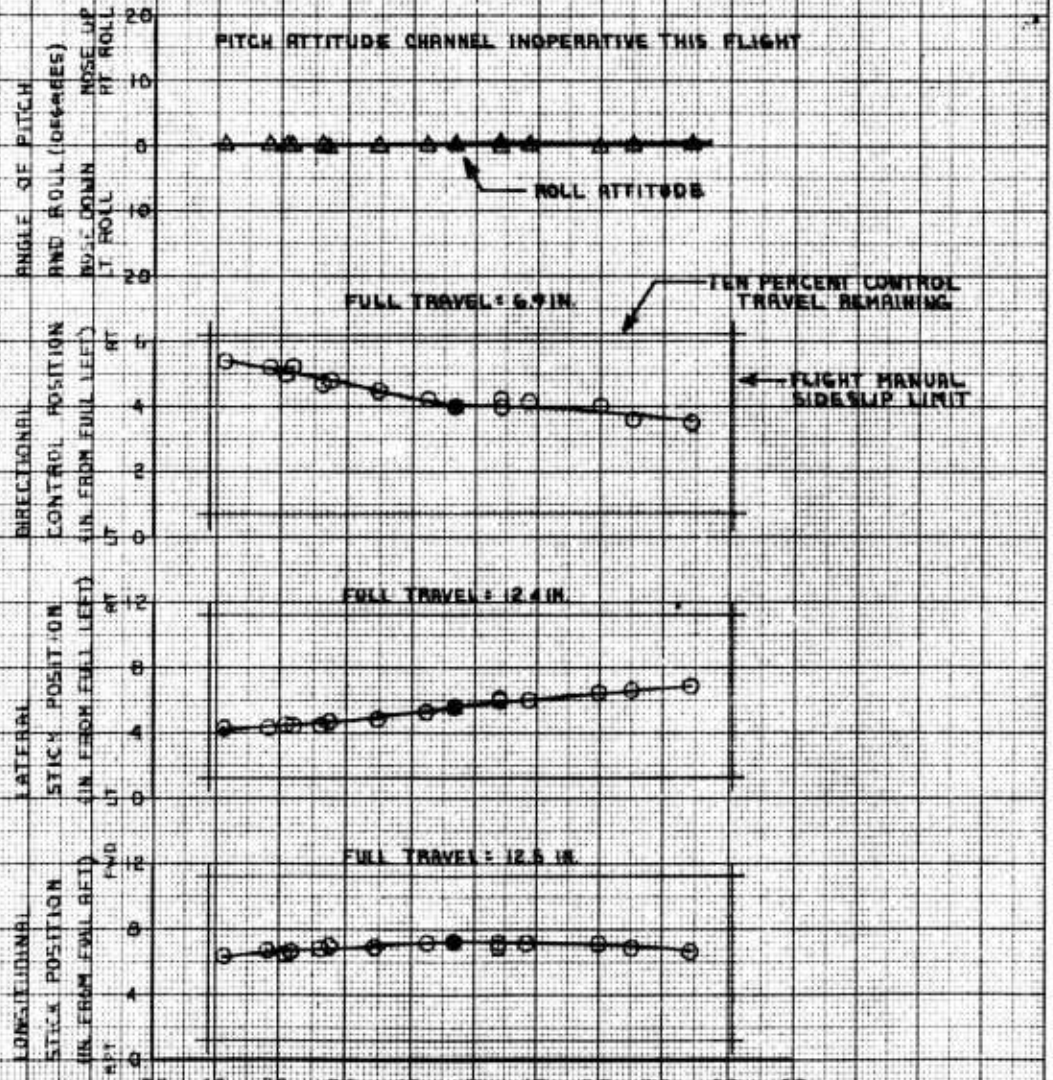


FIGURE 12. STATIC DIRECTIONAL STABILITY

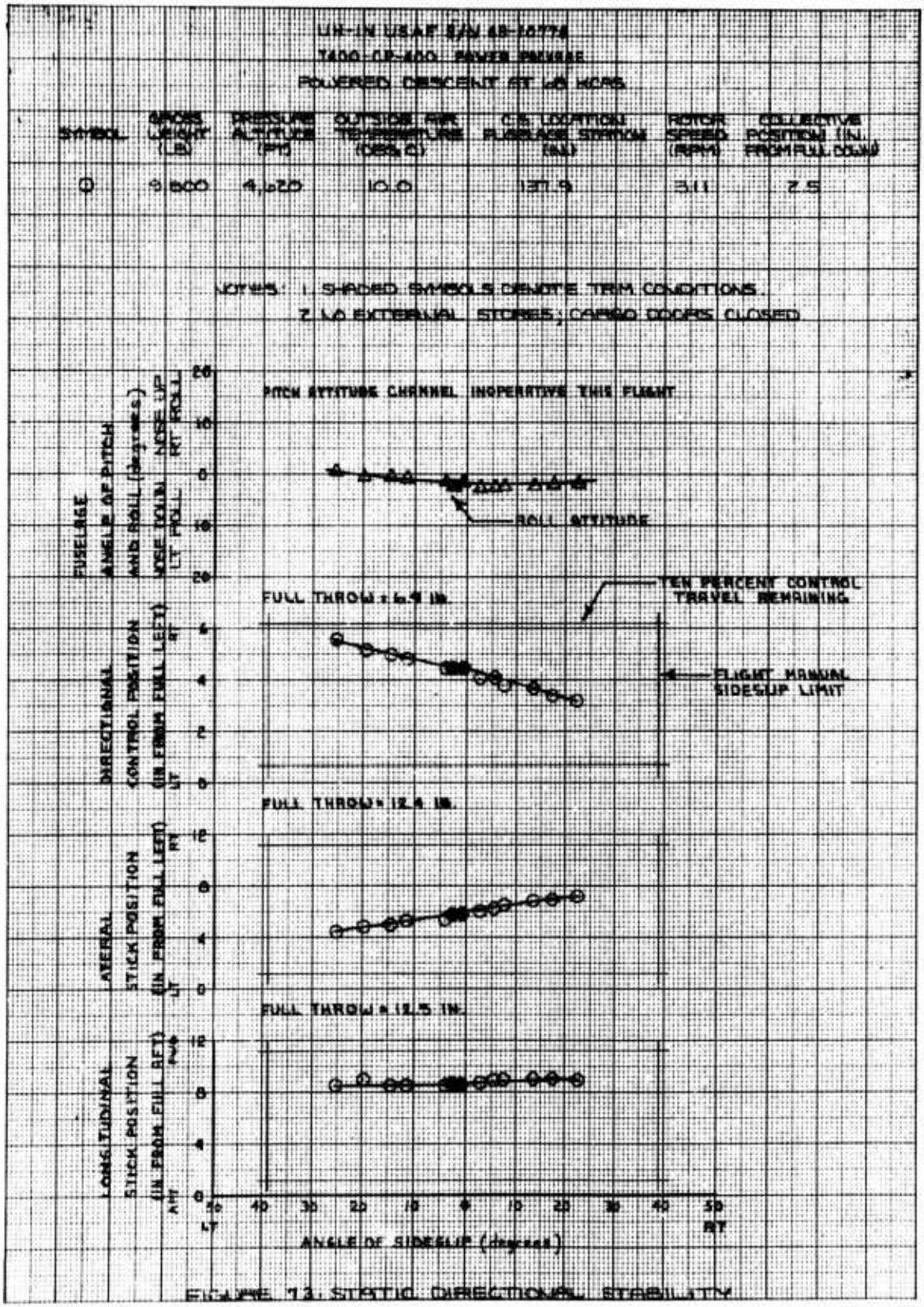


FIGURE 73. STATIC DIRECTIONAL STABILITY

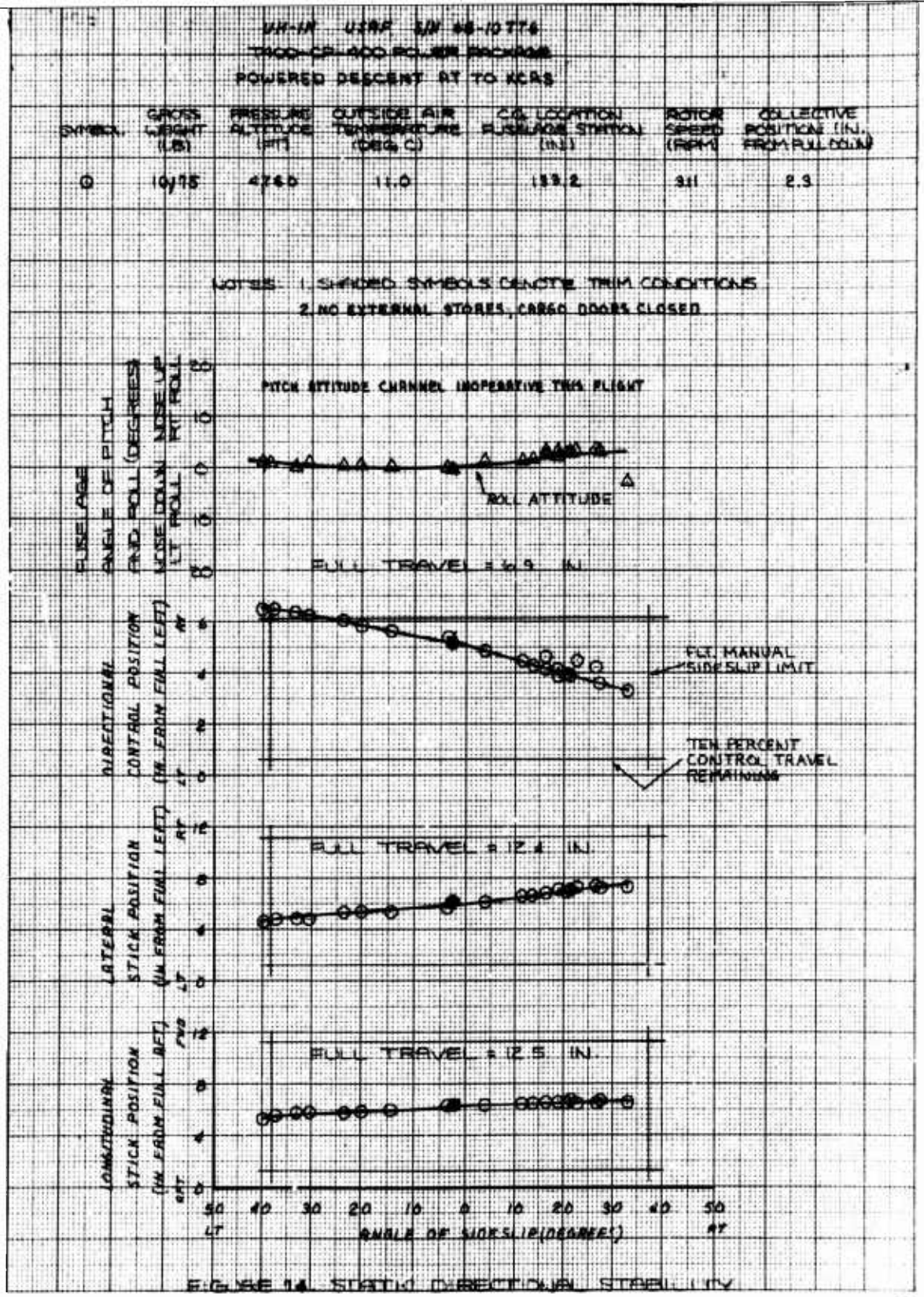


FIGURE 14. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10916

TRCV-CP-ACO POWER PACKAGE

POWERED DESCENT AT 60 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN.) FROM FULL DOWN
○	10059	8,870	3.0	132.3	312	9.0

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

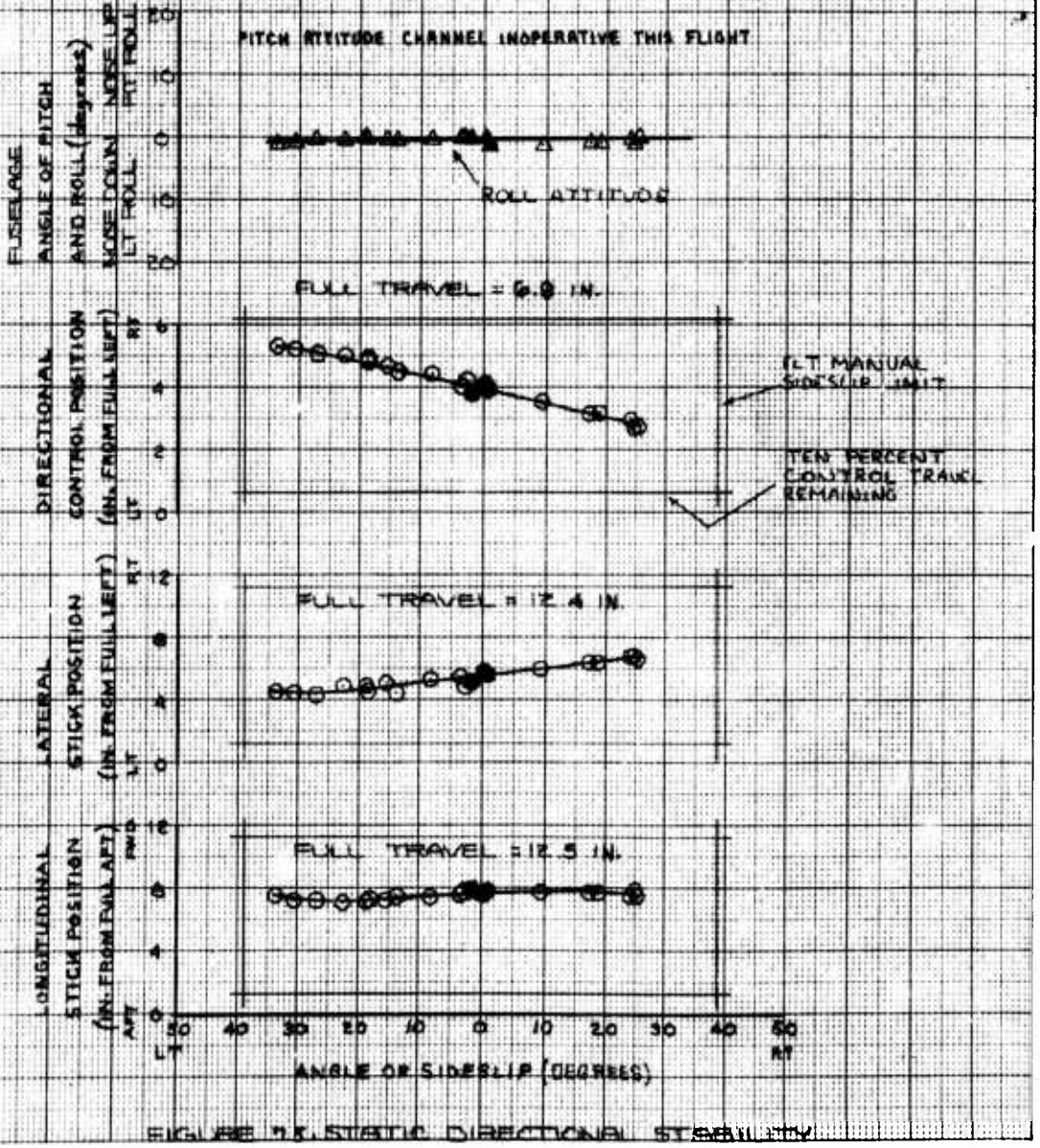


FIGURE 3-5. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
POWERED DESCENT RT TRACK

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG. C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9925	8,900	4.0	138.3	312	1.9

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

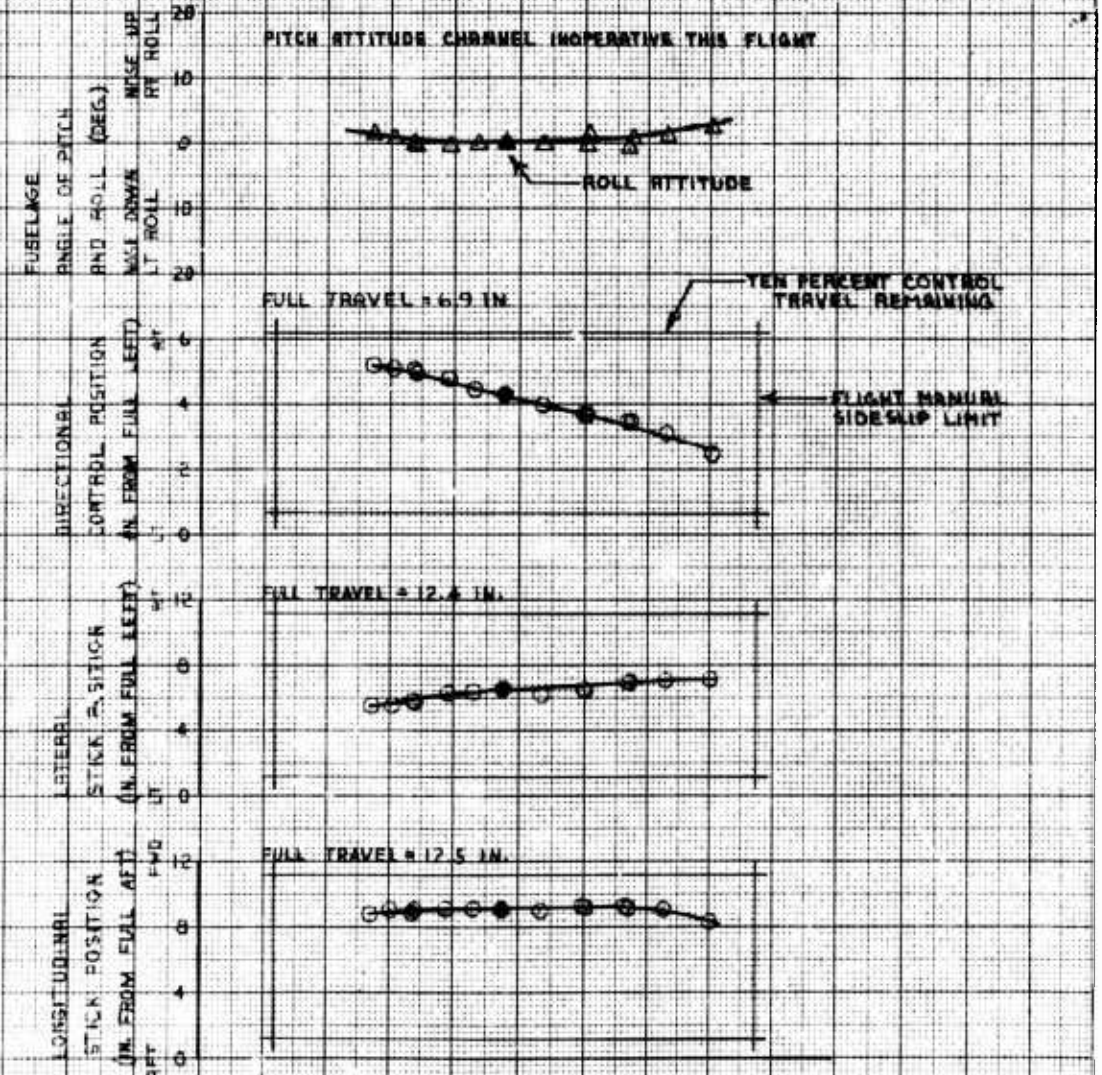


FIGURE 76. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10116
T400-CP-400 POWER PACKAGE
AUTOROTATION AT 74 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (°C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN.) FROM FULL DOWN
○	8,128	3,540	16.0	141.9	323	0.4

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

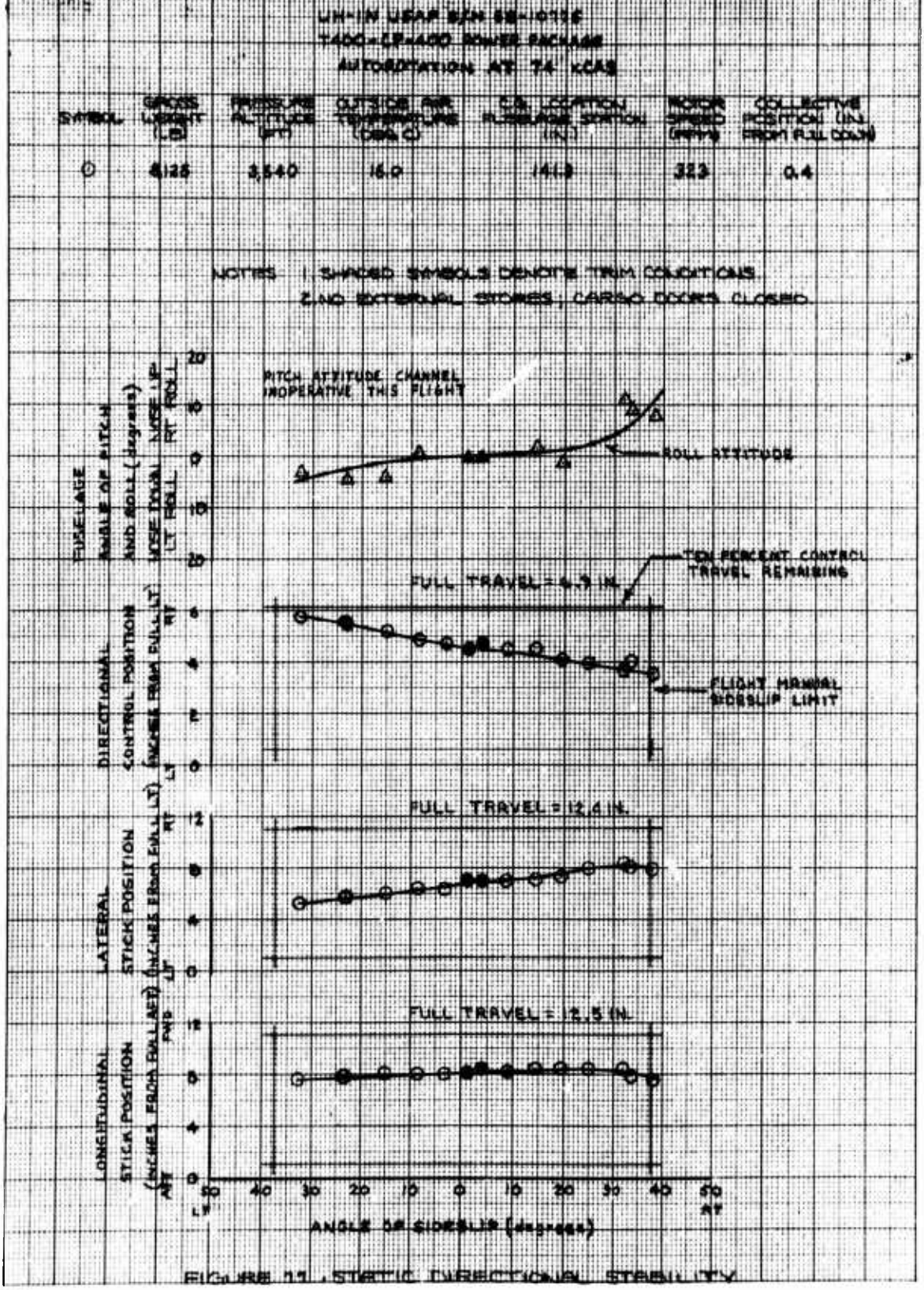


FIGURE 11. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10774
TWO-CELL/TWO-POWER RECOVERY
AUTOROTATION AT 64 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9330	4,450	13.5	133.3	92.6	0.5

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

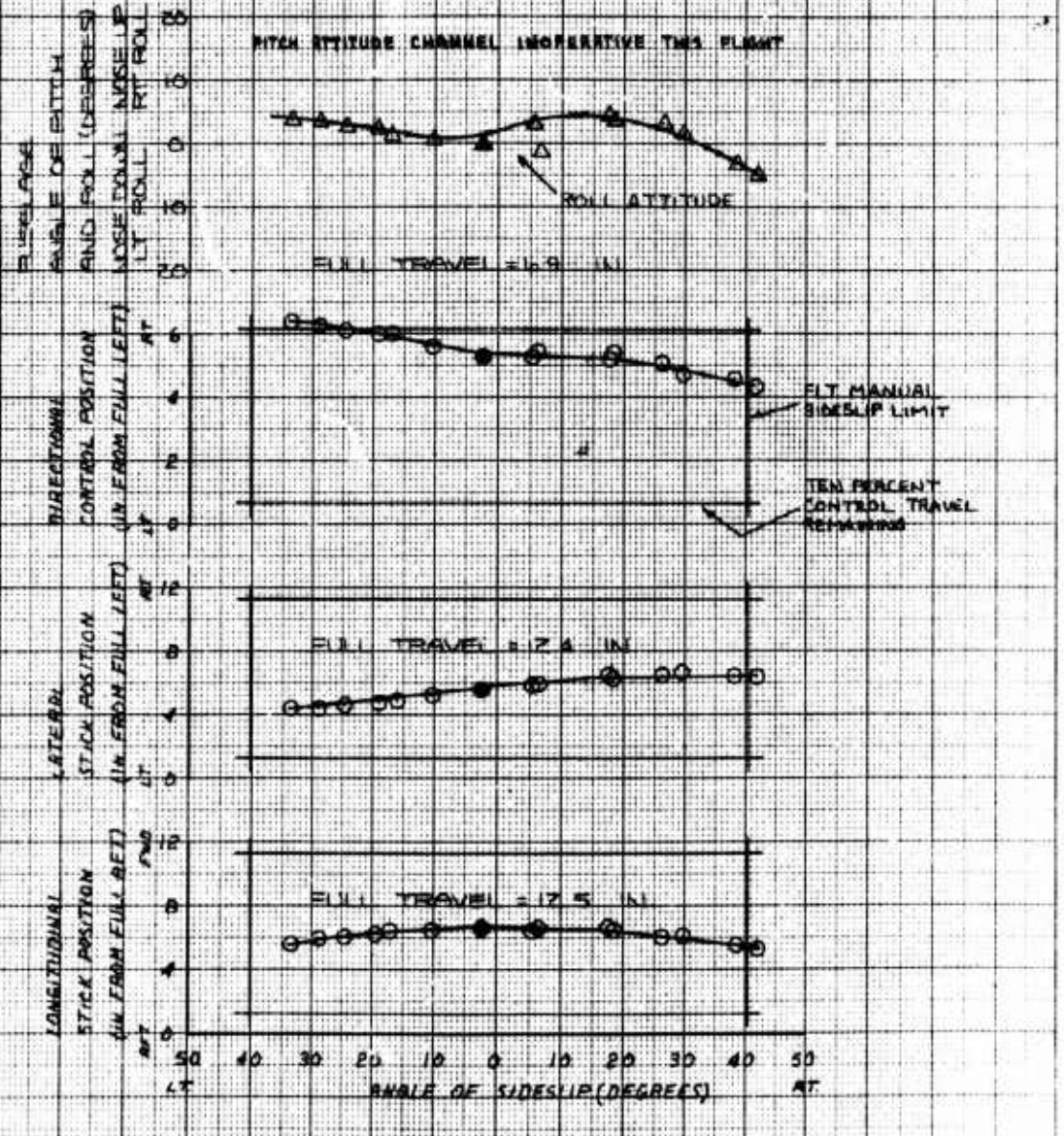


FIGURE 7A. STATIC DIRECTIONAL STABILITY

UH-1N USAF S/N 68-10774
TWO-OF-TWO POWER ENGINES
AUTOROTATION AT UP HCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION BUTTLINE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN.) FROM FULL DOWN
⊙	8850	4490	15.0	132.1	317	0.6

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. CARGO DOORS OPEN; LAU 59/A WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM 52 WEAPONS SYSTEM INSTALLED WITH BOTH LAUNCHERS IN THE FIXED-FORWARD FIRING POSITION.

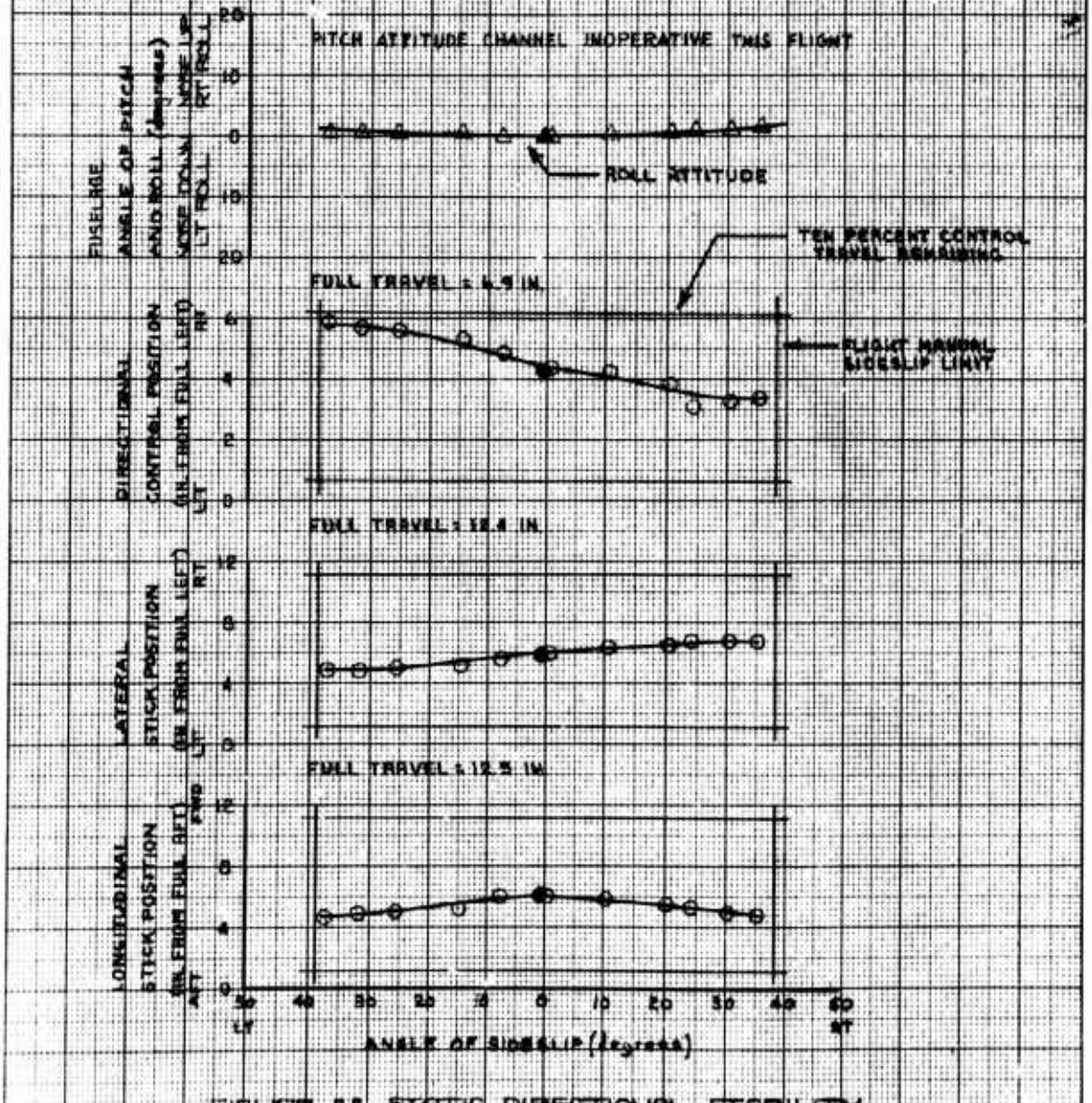


FIGURE 7-9. STATIC DIRECTIONAL STABILITY

UH-1B USAF S/N 58-1076
T400-CP-400 POWER PACKAGE
AUTOROTATION AT 7. KCAS

SYMBOL	GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (R.P.M.)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9,925	4,650	14.0	138.2	320	5.9

NOTES: 1 SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2 NO EXTERNAL STORES, CARGO DOORS CLOSED.

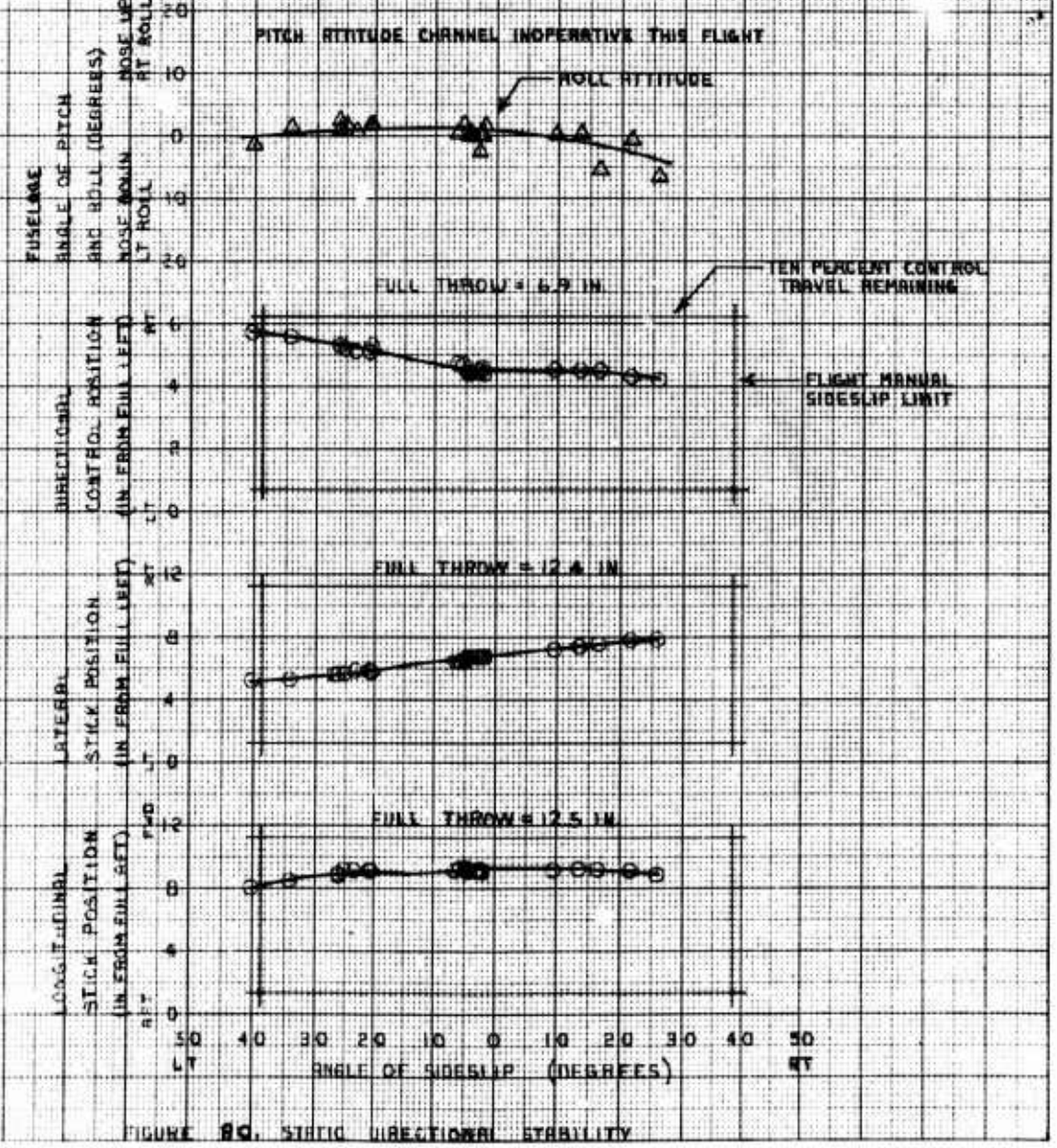


FIGURE 80. STATIC DIRECTIONAL STABILITY

UH-1H USAF SER NO 64-13575
T400-CP-400 POWER PACKAGE
AUTOROTATION AT VI KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	REFERENCE AIRSPEED (KIAS)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN FROM FULL DOWN)
⊙	9,050	4550	31.5	138.9	518	1.5

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.

2. CARGO DOORS OPEN. LEFT SIDE WEAPONS SYSTEM INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN EACH POD; XM-28 WEAPONS SYSTEM INSTALLED WITH BOTH MINIGUNS IN THE FIXED-FORWARD FIRING POSITION.

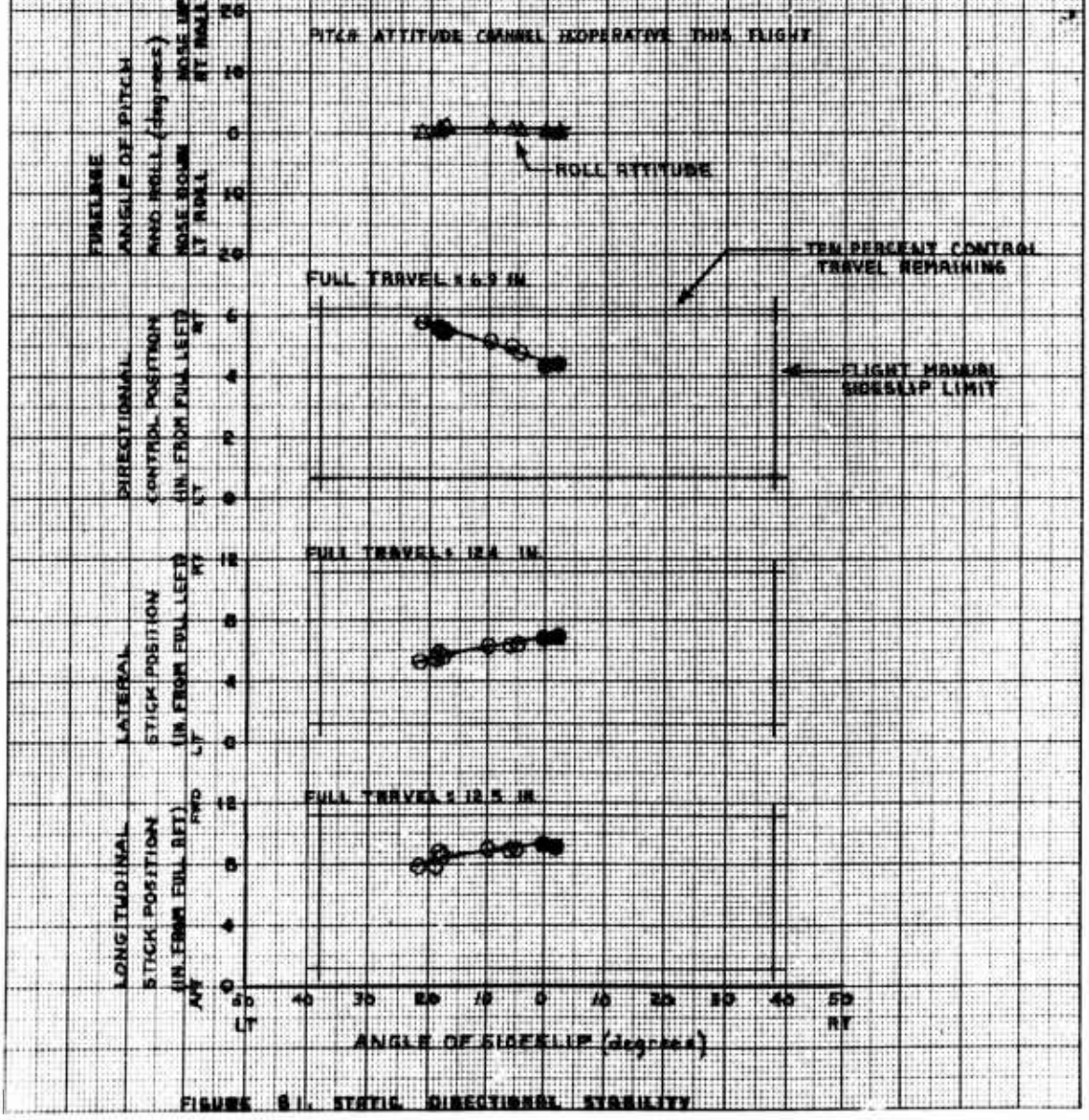


FIGURE 61. STATIC DIRECTIONAL STABILITY

UH-1N USAF SN 68-10776
T400-CP-400 POWER PACKAGE
AUTOROTATION AT 78 KCAS

SYMBOL	GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	COLLECTIVE POSITION (IN. FROM FULL DOWN)
○	9650	5800	4.0	137.3	320	2.1

NOTES: 1. SHADED SYMBOLS DENOTE TRIM CONDITIONS.
2. NO EXTERNAL STORES; CARGO DOORS CLOSED.

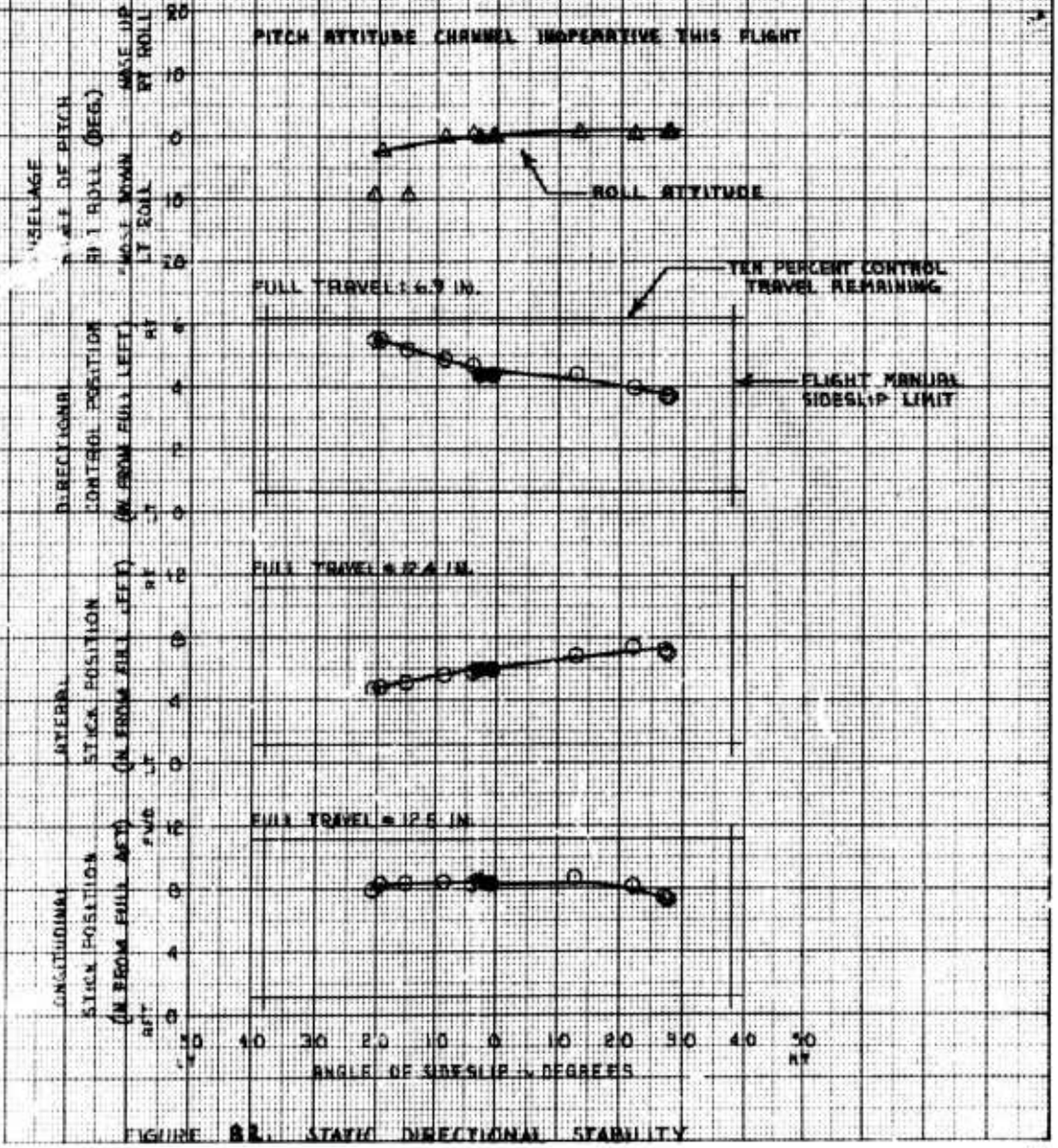


FIGURE 82. STATIC DIRECTIONAL STABILITY

UH-IN USAF S/N 6
T400-CP-400 POWER P

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. FUSELAGE STAT (IN.)
8,600	13,960	-9.9	140.1

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

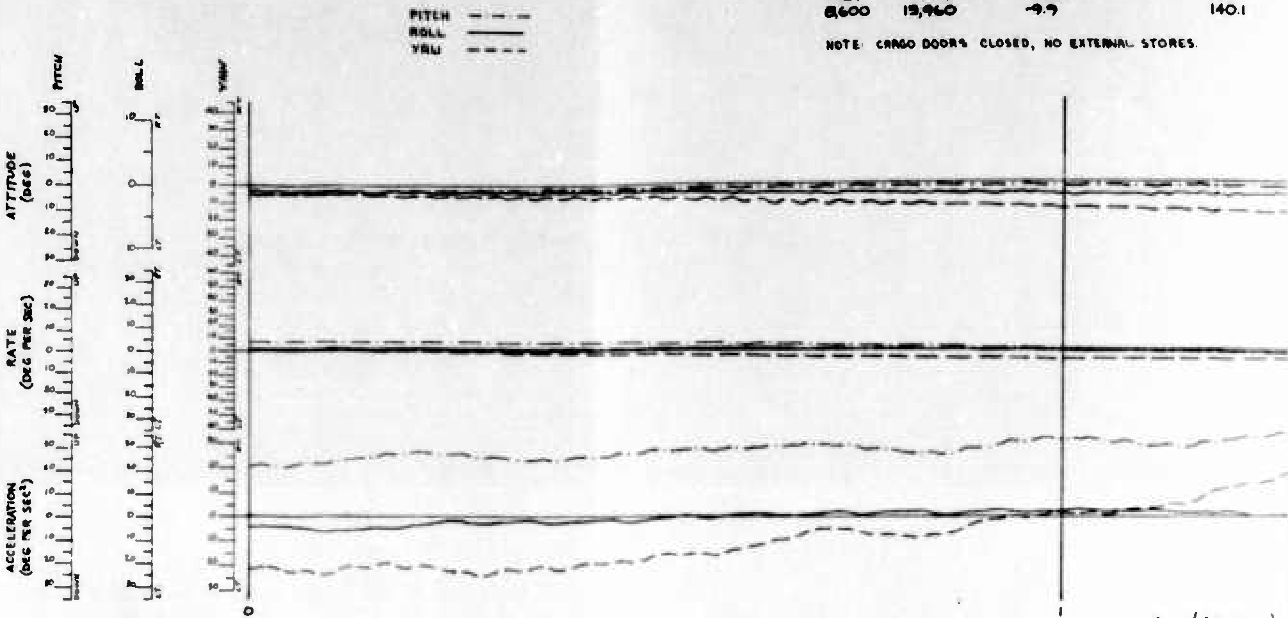
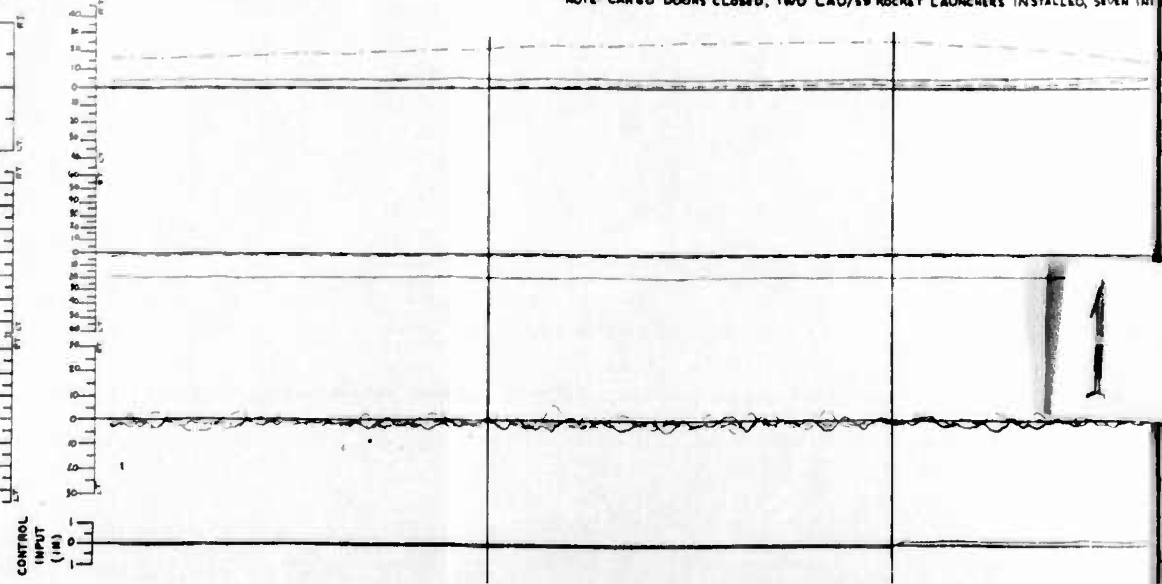


FIGURE 83 AIRCRAFT CHARACTERISTICS A

UH-IN USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

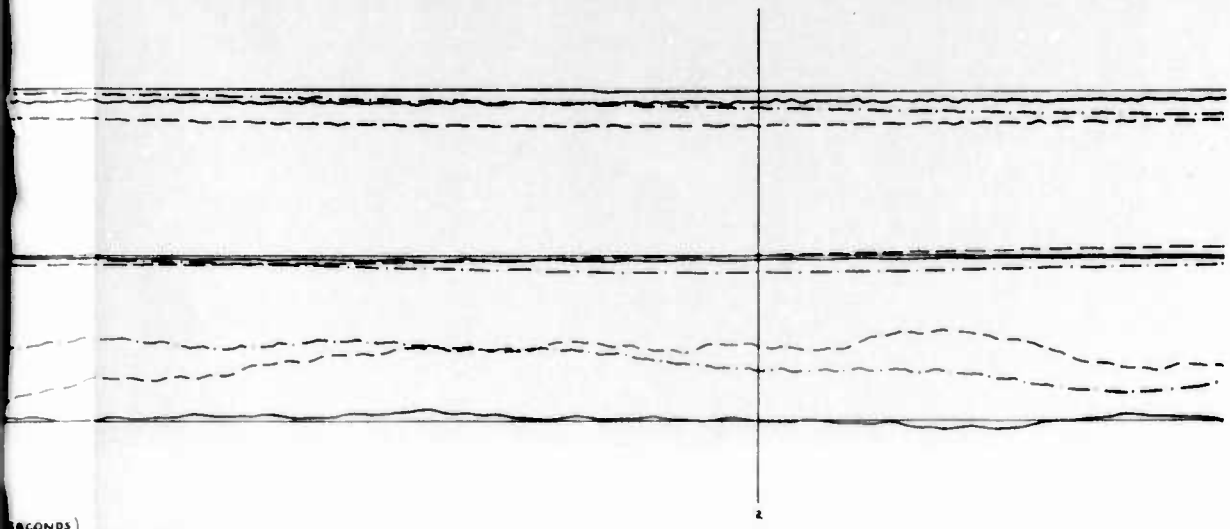
GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL CG LOCATION FUSELAGE STATION (IN.)
9,875	5,090	21.0	132.1

NOTE: CARGO DOORS CLOSED, TWO LAU/59 ROCKET LAUNCHERS INSTALLED, SEVEN IN



AF S/N 68-10776
POWER PACKAGE

ONAL C.G. LOCATION AGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
401	311	76	LEVEL FLIGHT

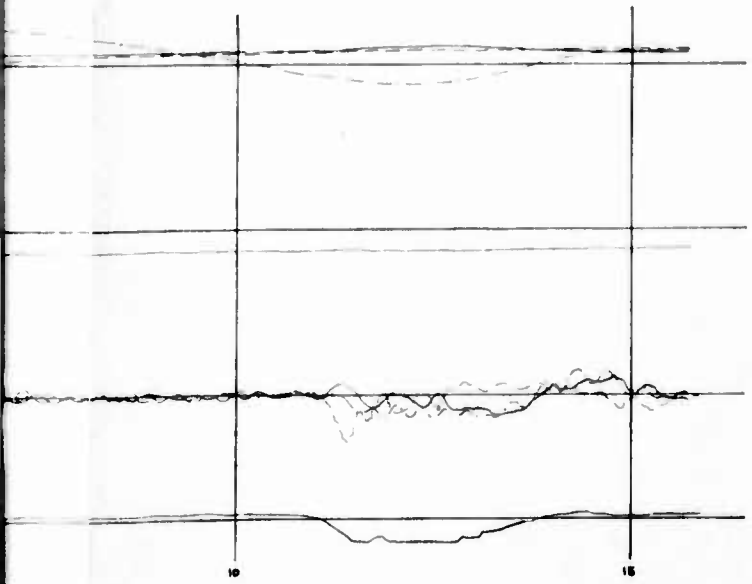


SECONDS)

RISTICS AT LARGE SIDESLIP ANGLES

GE CATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	318	86	LEVEL FLIGHT

ED, SEVEN INERT 2.75 IN. ROCKETS IN EACH POD.



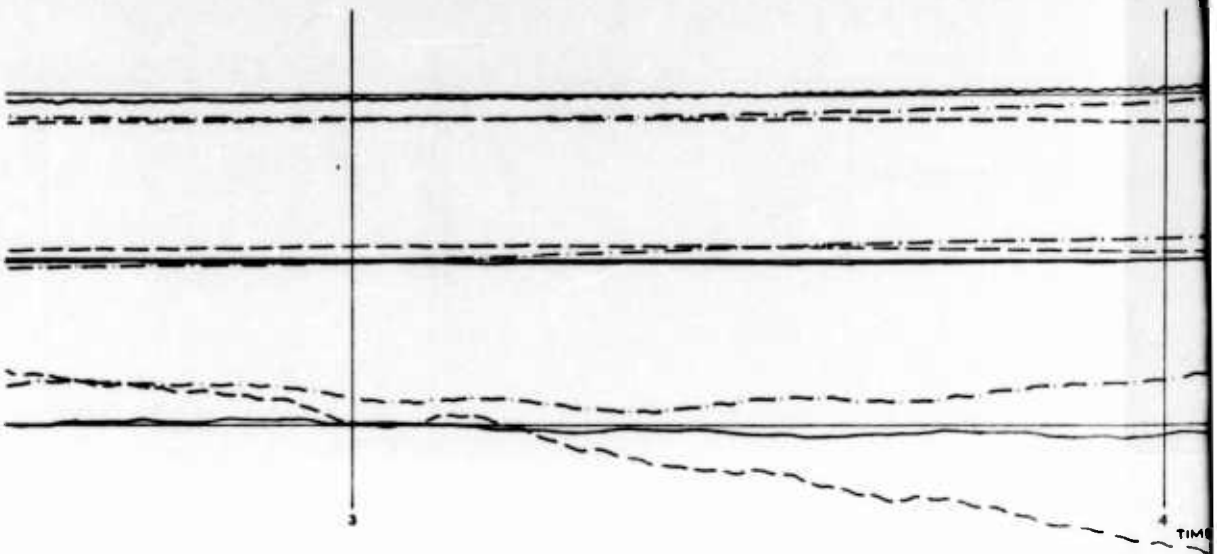


FIGURE 83 C

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G LOCATION FUSELAGE STATION (IN.)	ROT SPE (R
9,850	5,140	21.0	132.0	31

NOTE: CARGO DOORS CLOSED, TWO LAU/59 ROCKET LAUNCHERS INSTALLED, SEVEN IN

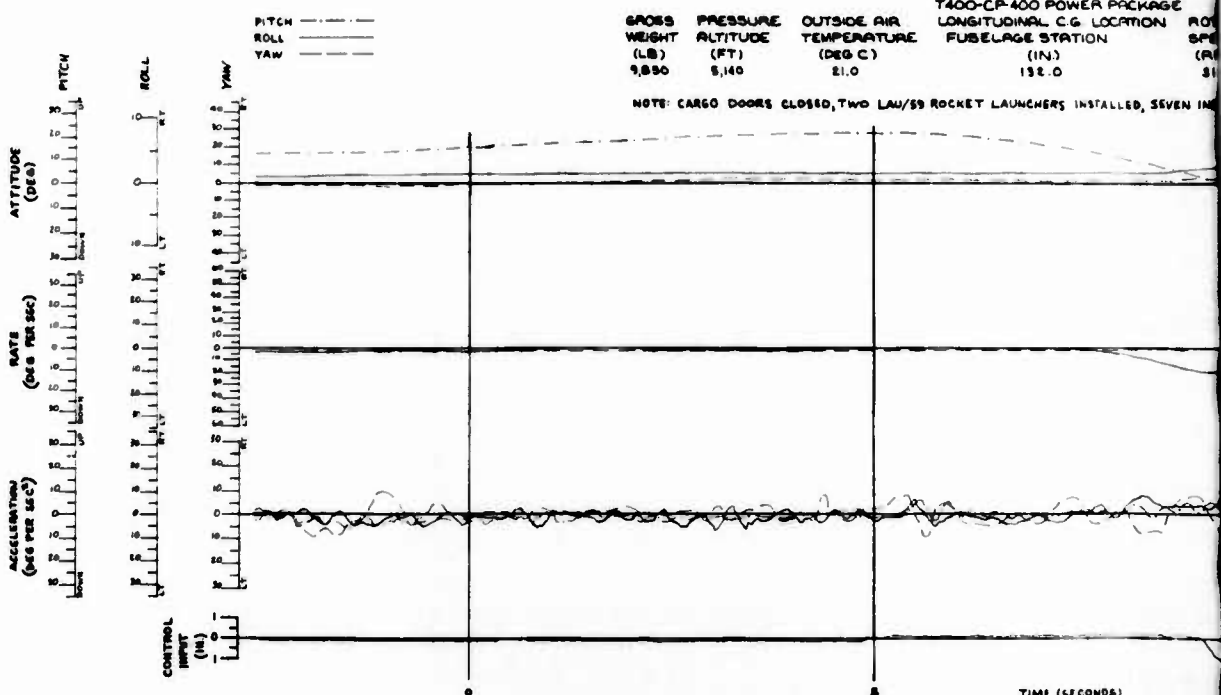


FIGURE 85. LONGITUDINAL DYNAMI

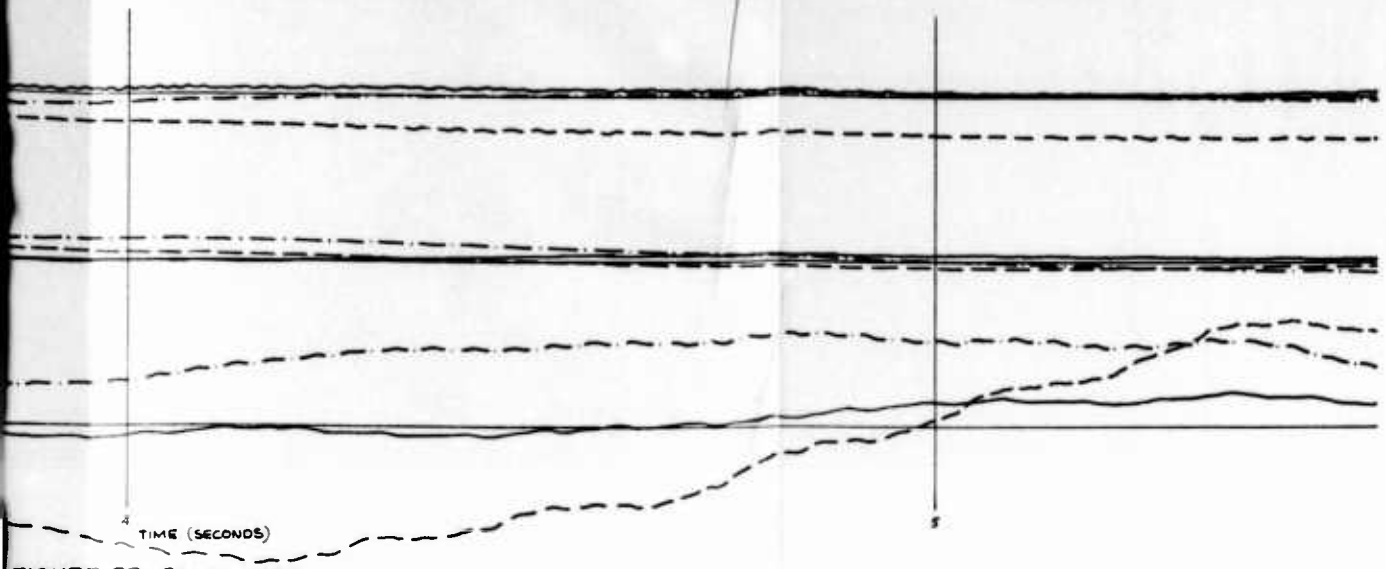
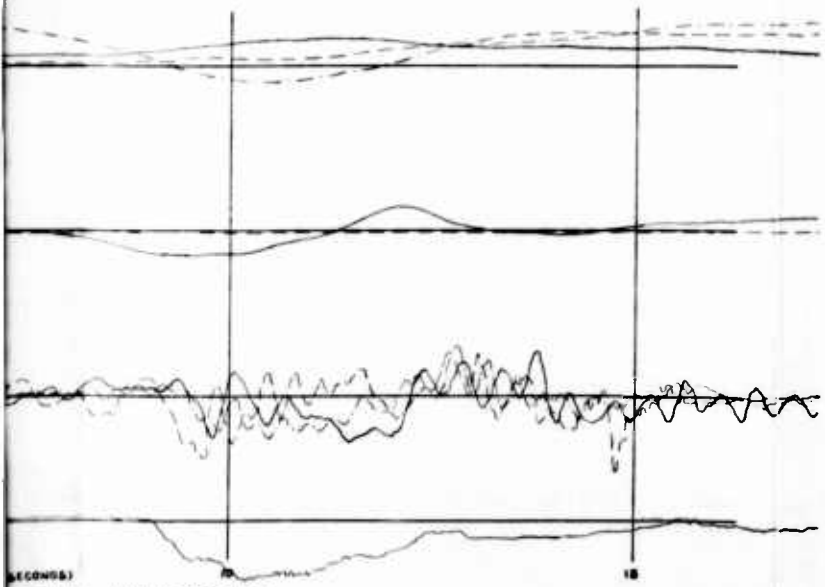


FIGURE 83 CONCLUDED

S/N 68-10776
POWER PACKAGE

C.G. LOCATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
TATION			
)			
0	313	100	LEVEL FLIGHT

RS INSTALLED, SEVEN INERT 2.75 IN. ROCKETS IN EACH POD.



SECONDS)

GITUDINAL DYNAMIC STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)
9,800	3,420	18.0	137.9

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

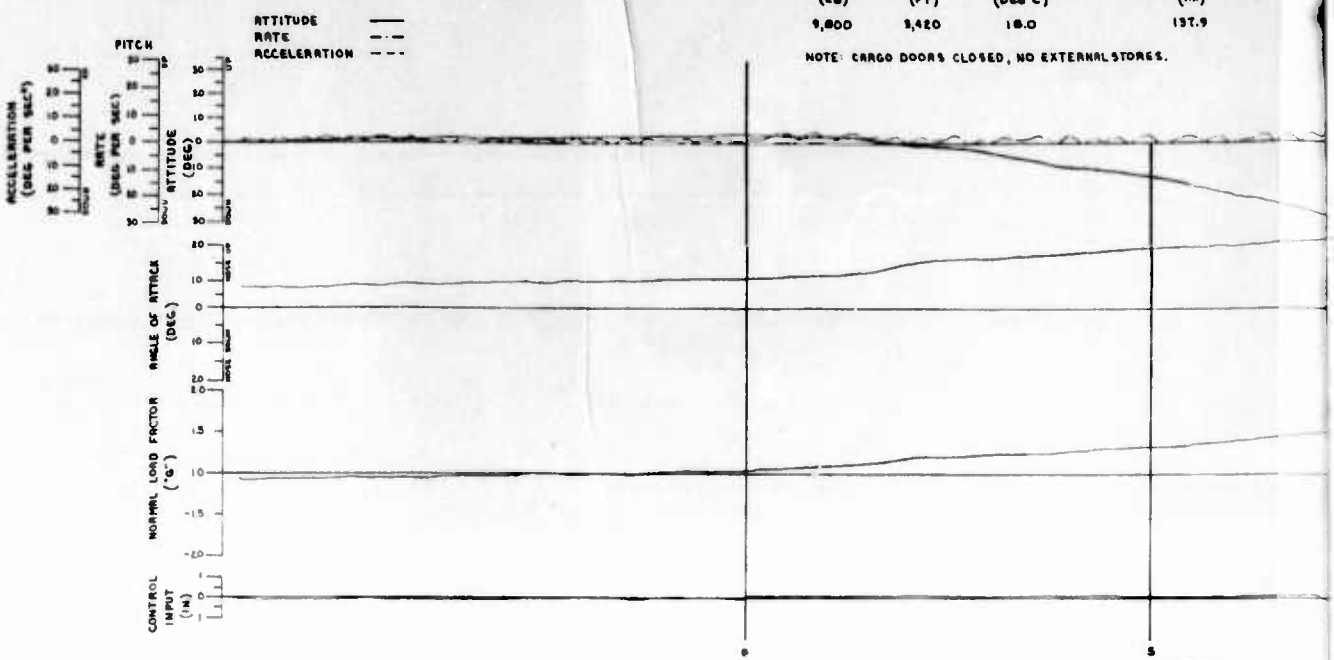
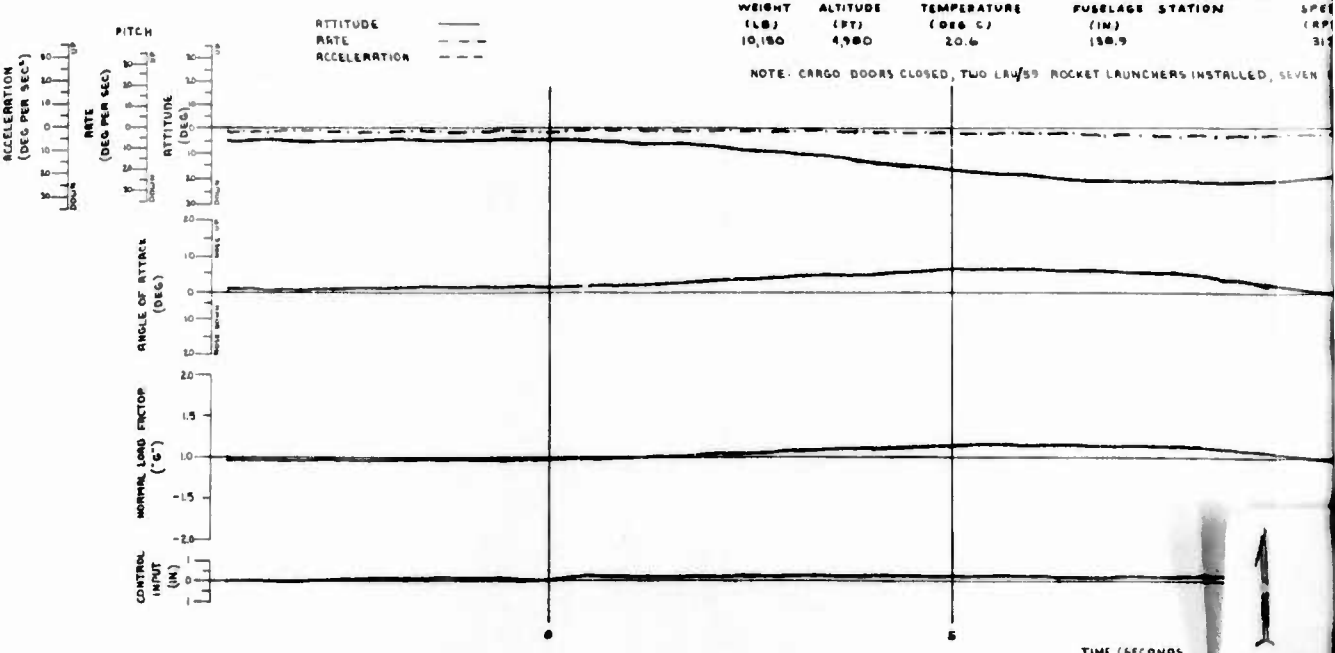


FIGURE 86. LONGITUDINAL DYNAMIC STABILITY

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

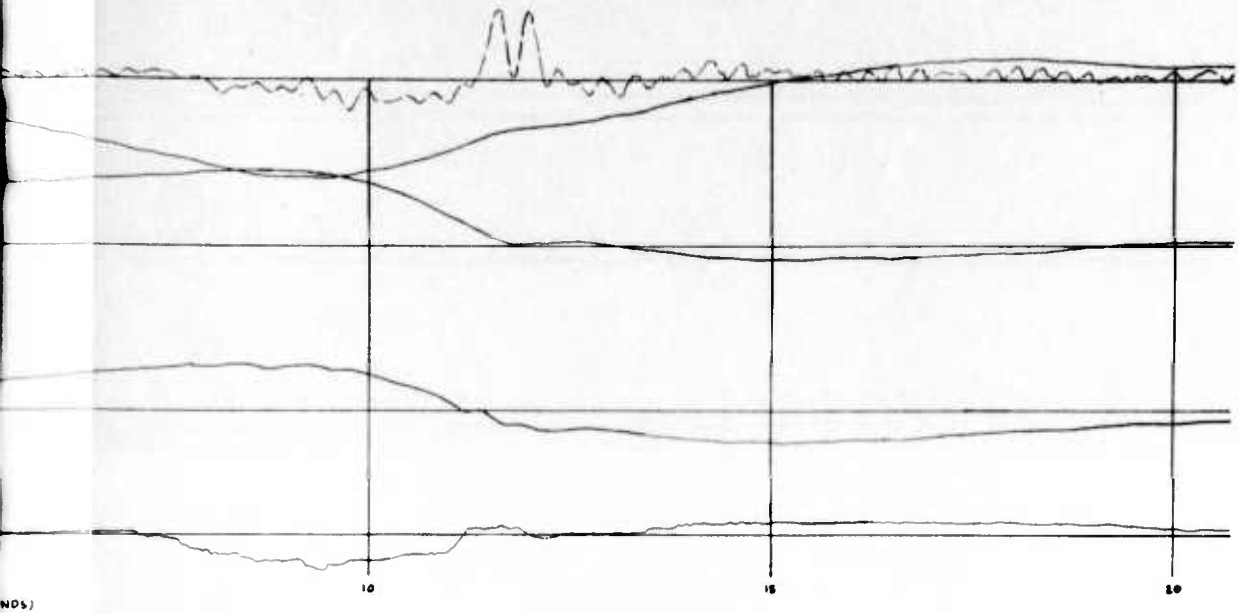
GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)
10,180	4,980	20.6	138.9	313

NOTE: CARGO DOORS CLOSED, TWO LAU-59 ROCKET LAUNCHERS INSTALLED, SEVEN



RF S/N 68-10776
POWER PACKAGE
L C & LOCATION
STATION
)
.9

ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
313	64	CLIMB

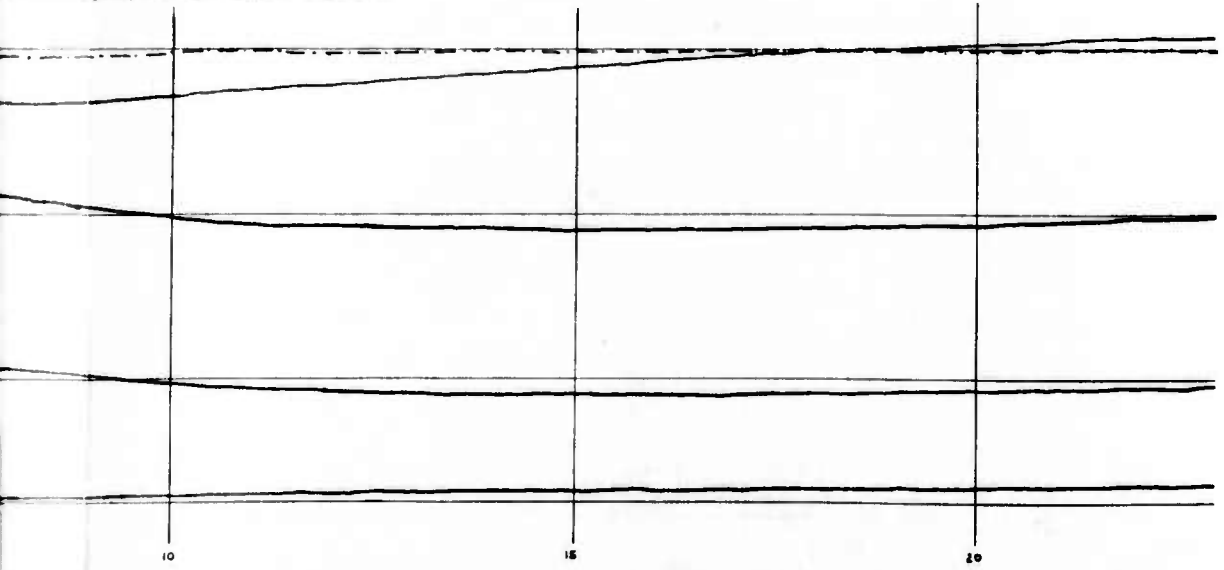


NDS)
DYNAMIC STABILITY

8-10776
ACKAGE
G. LOCATION
TION

ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
313	70	CLIMB

INSTALLED: SEVEN INERT 2.75 IN. ROCKETS IN EACH POD



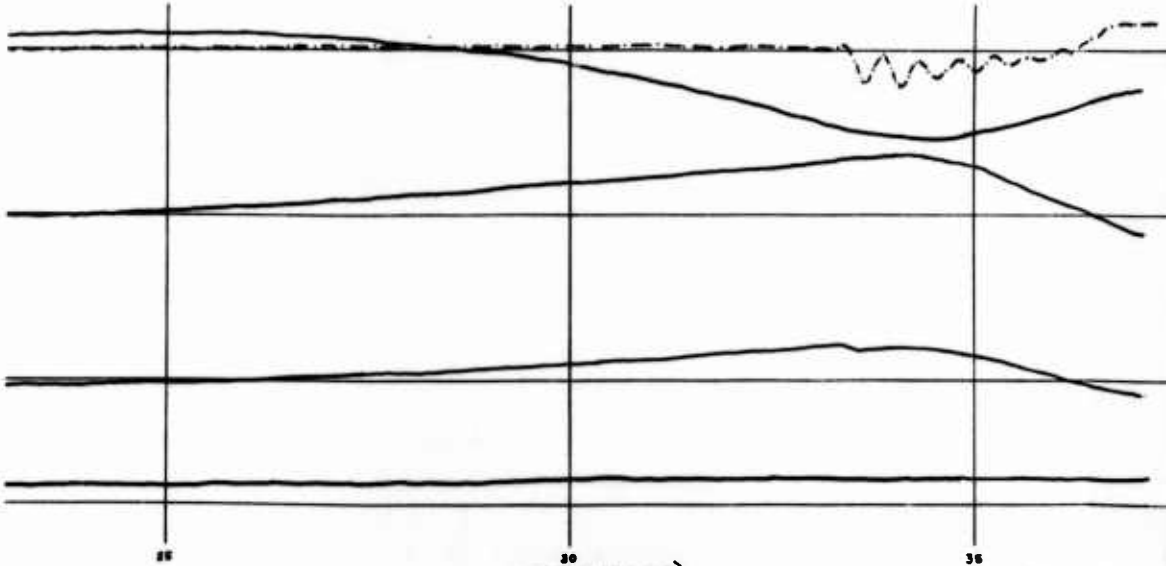
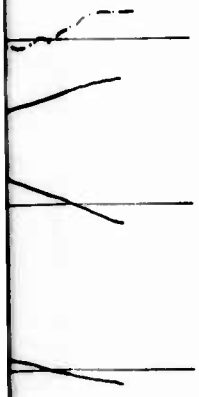
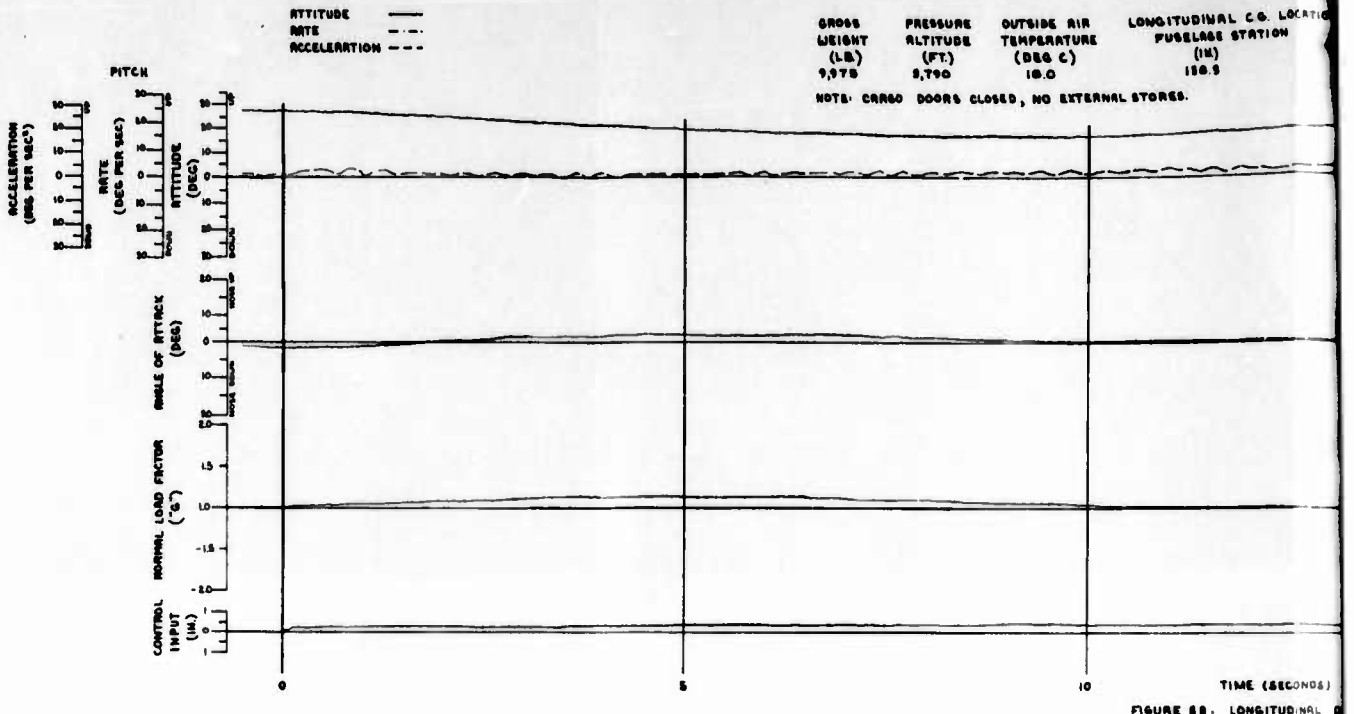


FIGURE 87 CONCLUDED



UH-1N USAF S/N 68-15776
T400-CP-400 POWER PLANT

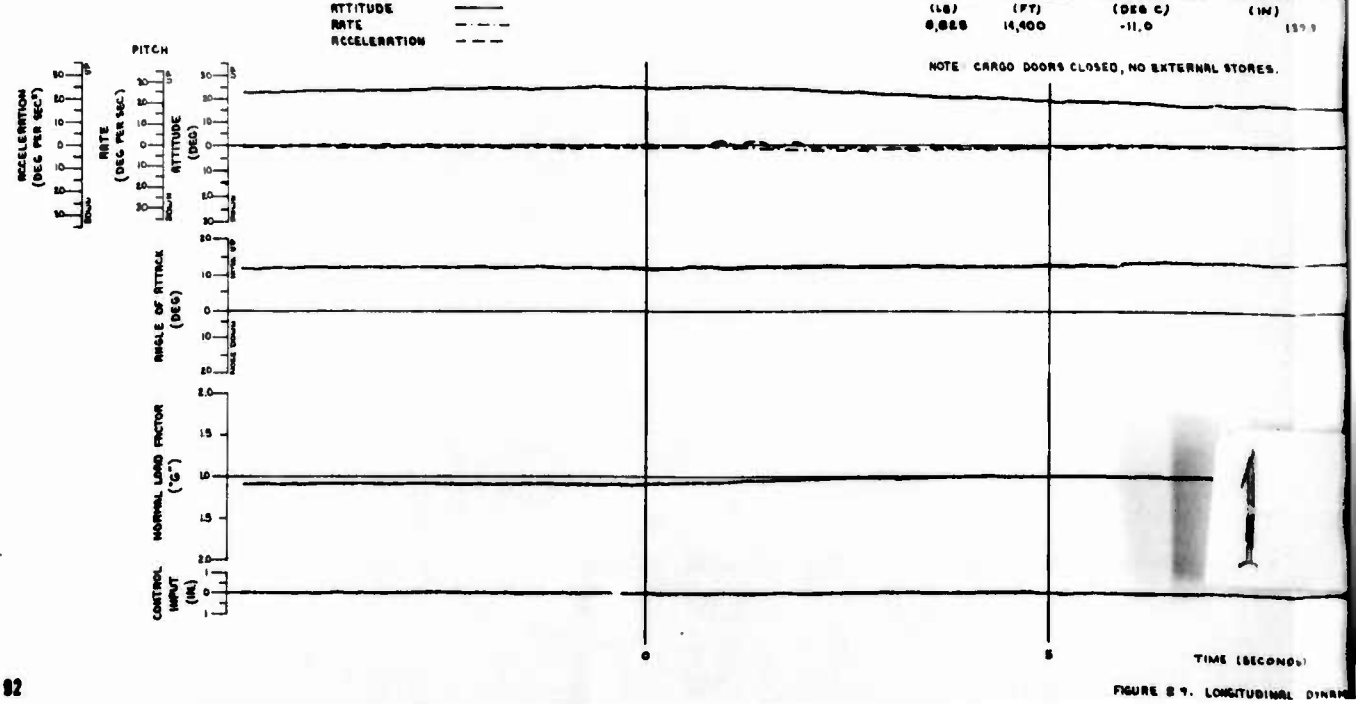


GROSS WEIGHT (LB.)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C.)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)
9,978	9,790	18.0	158.9

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

FIGURE 88. LONGITUDINAL D

UH-1N USAF S/N
T400-CP-400 POWER



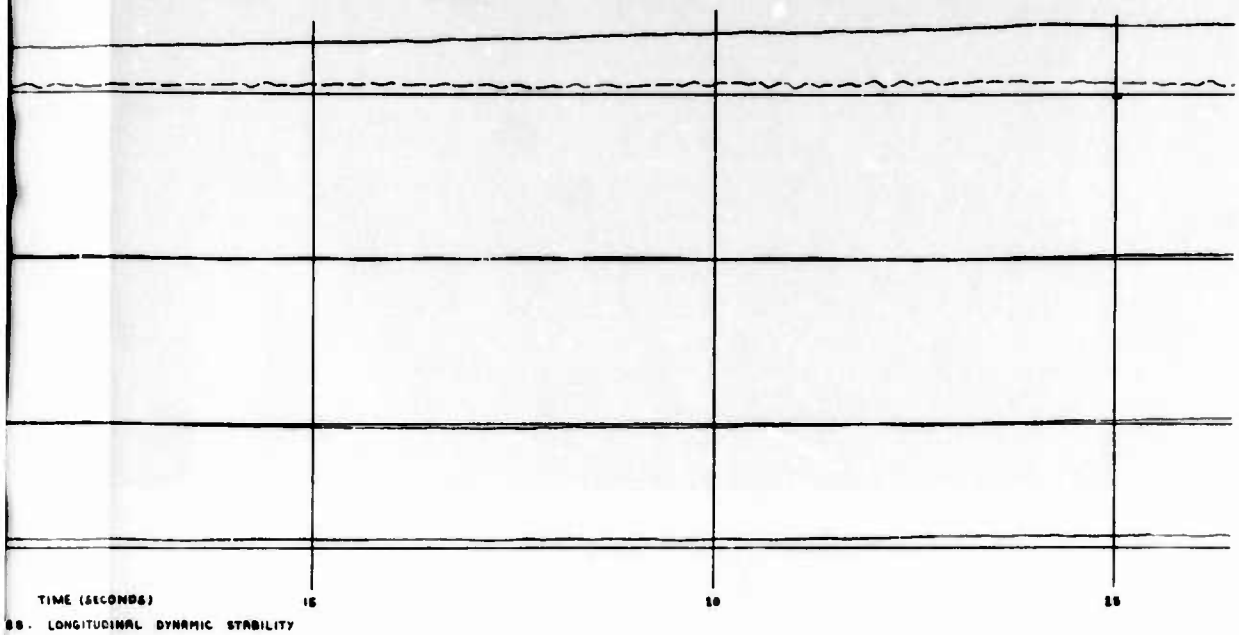
GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C. FUSELAGE ST (IN)
8,828	14,400	-11.0	159.9

NOTE CARGO DOORS CLOSED, NO EXTERNAL STORES.

FIGURE 89. LONGITUDINAL DYNAM

USAF S/N 68-10776
400 POWER PACKAGE

NAL C.G. LOCATION AGE STATION (IN)	ROTOR SPEED (R.P.M.)	AIRSPEED (KCAS)	FLIGHT CONDITION
3	315	65	LEVEL FLIGHT

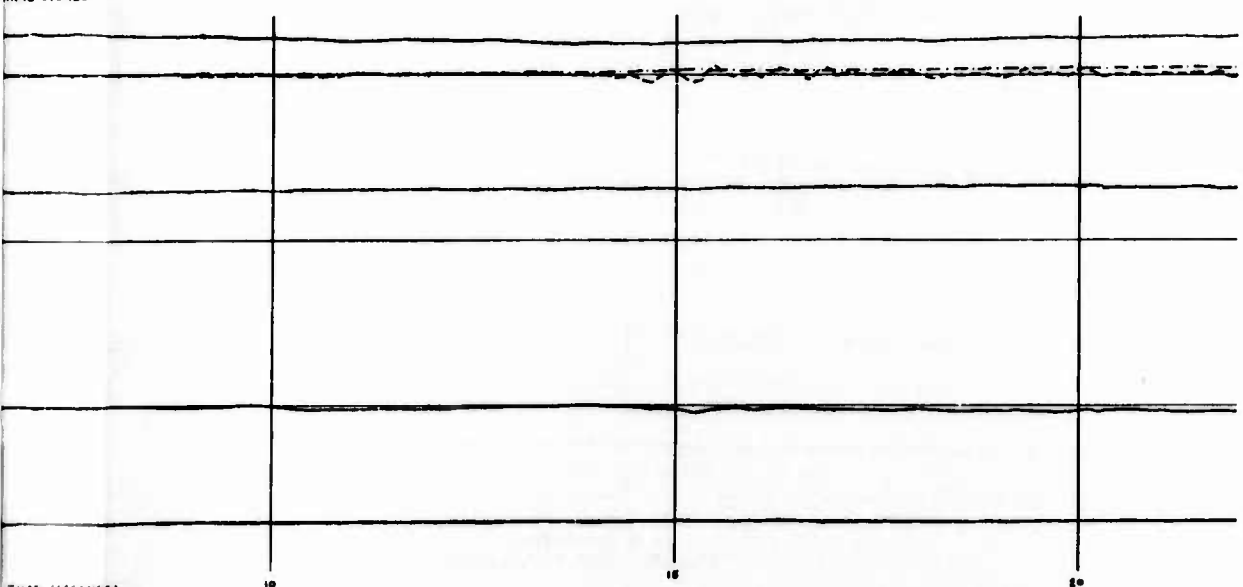


68. LONGITUDINAL DYNAMIC STABILITY

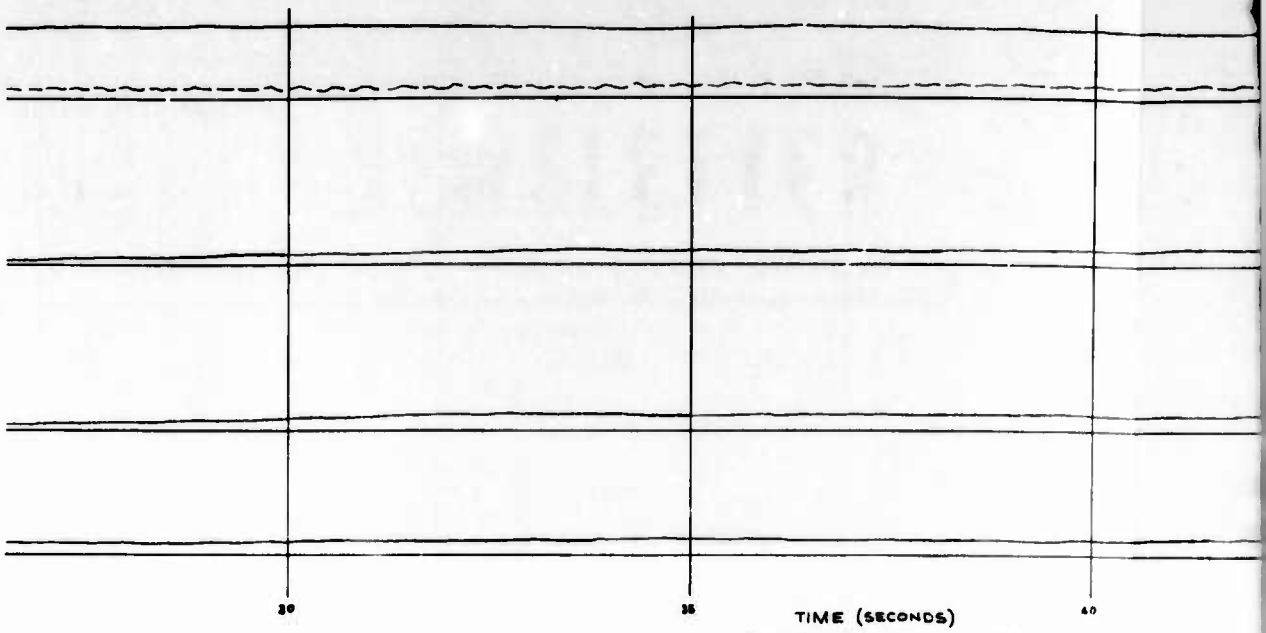
UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

R LONGITUDINAL C.G. LOCATION RE FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
159.9	315	67	LEVEL FLIGHT

NAL STORES

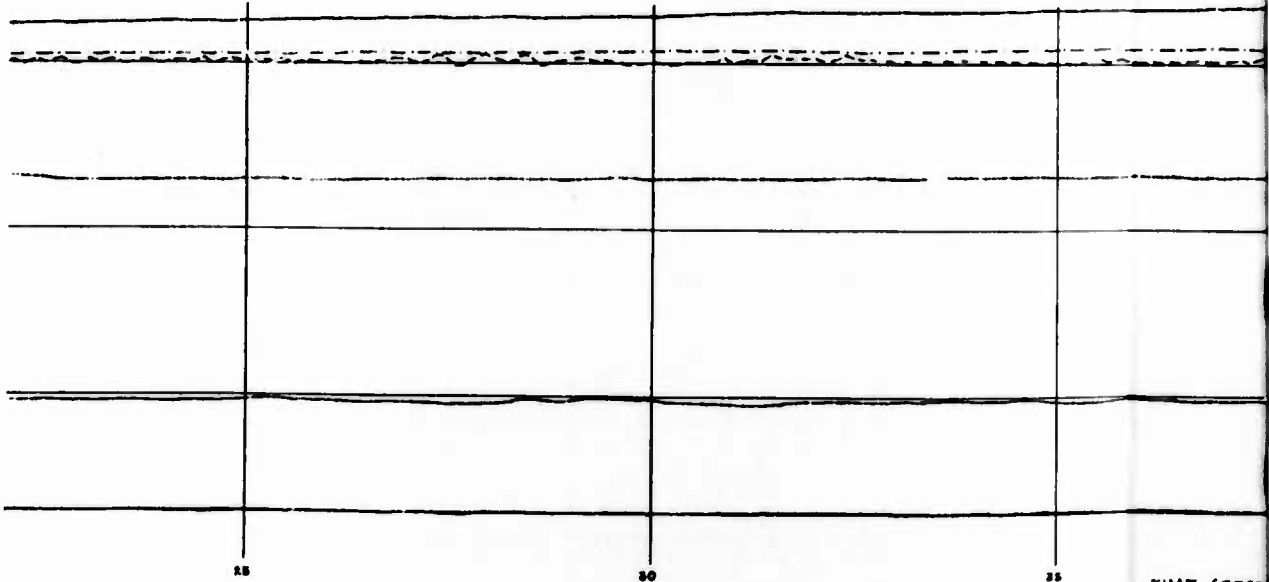


LONGITUDINAL DYNAMIC STABILITY



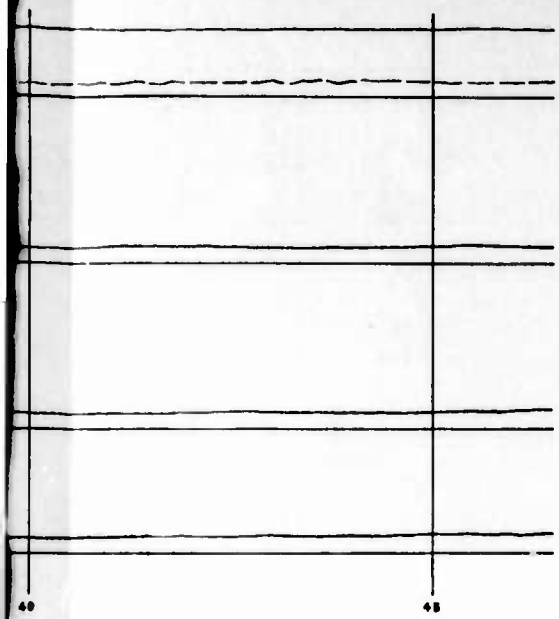
TIME (SECONDS)

FIGURE 88 CONCLUDED

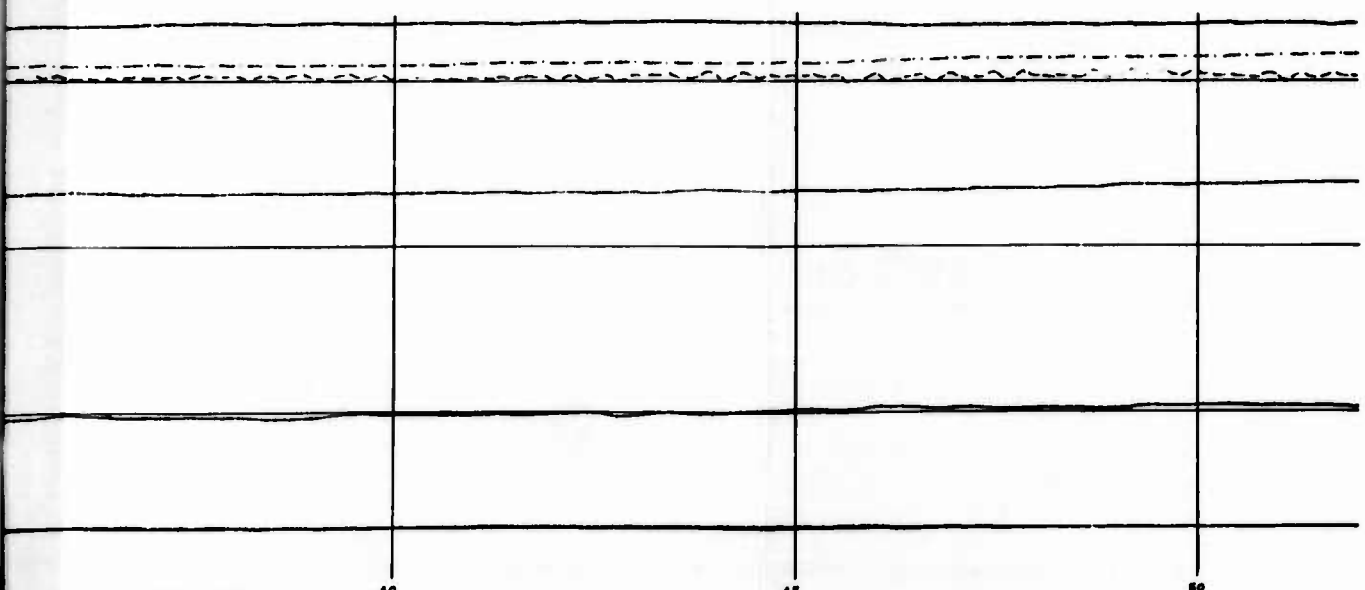


TIME (SECO

FIGURE 89 CON



12



TIME (SECONDS)

FIGURE 89 CONCLUDED

UH-1N USAF S/N 68-1077
T400-CP-400 POWER PACKAGE

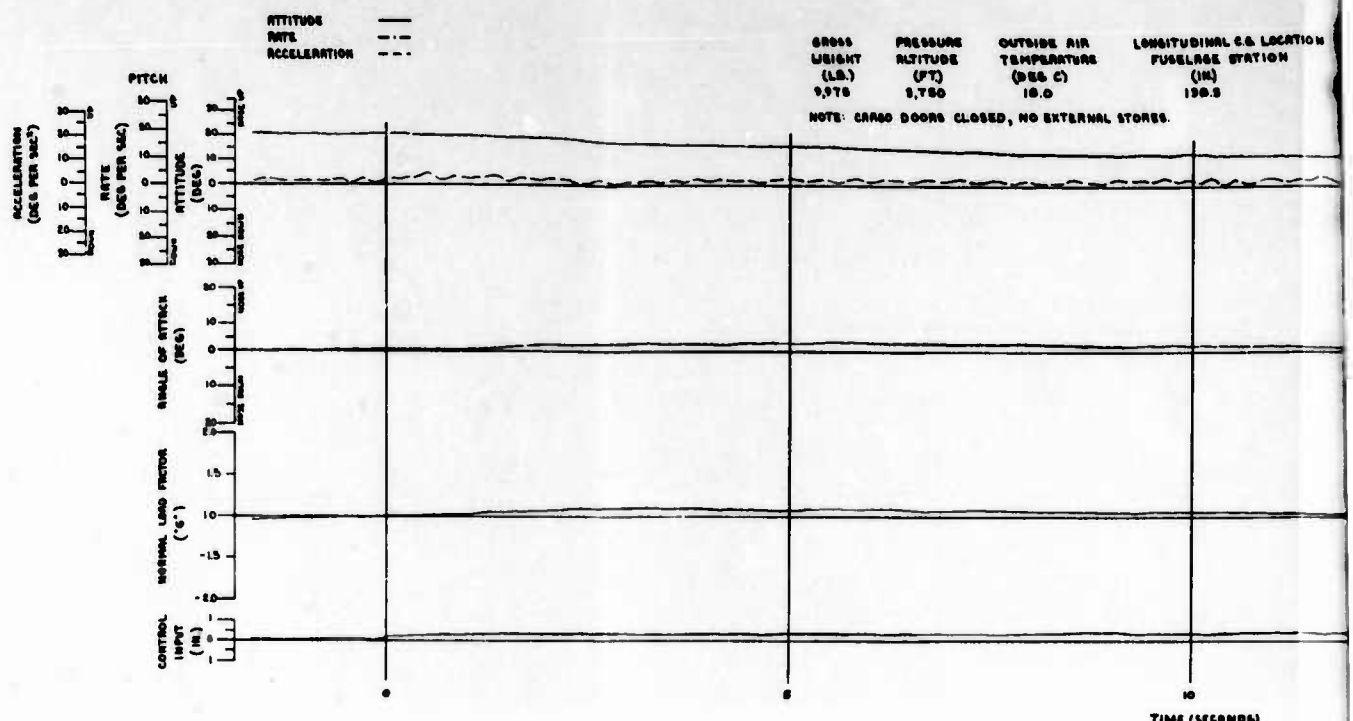


FIGURE 90. LONGITUDINAL DYNAMIC

UH-1N USAF S/N 68-1077
T400-CP-400 POWER PACK

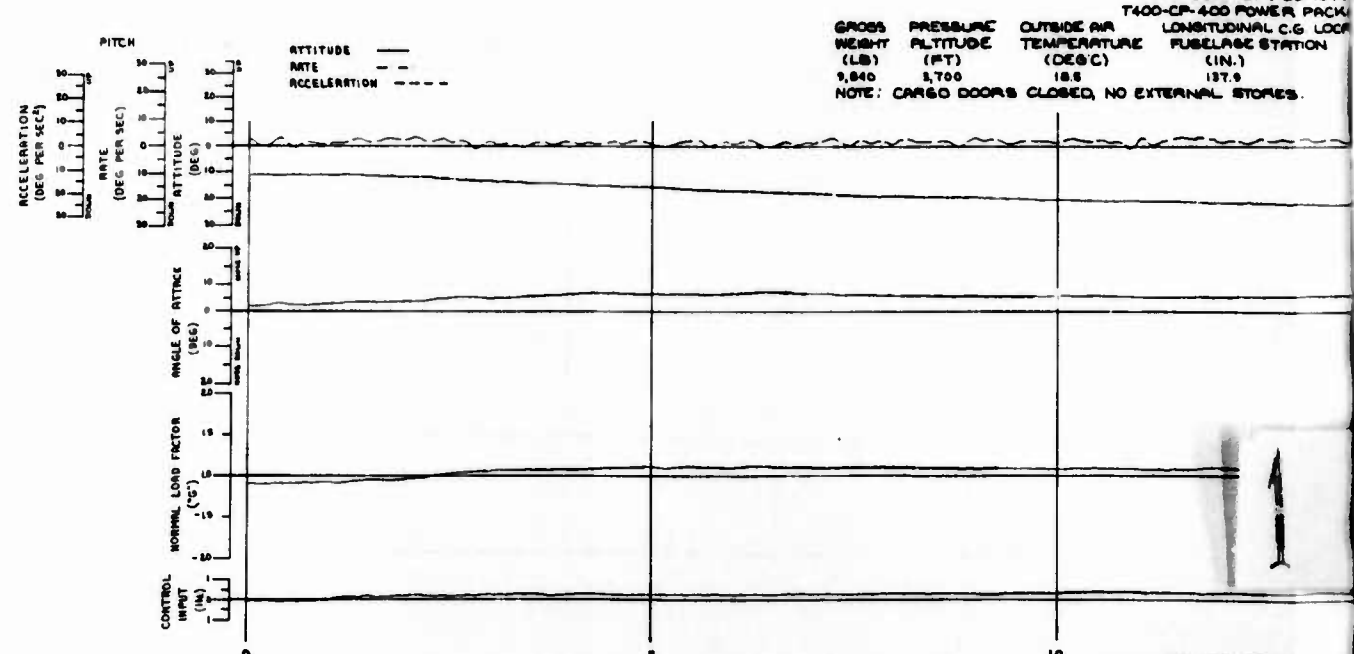
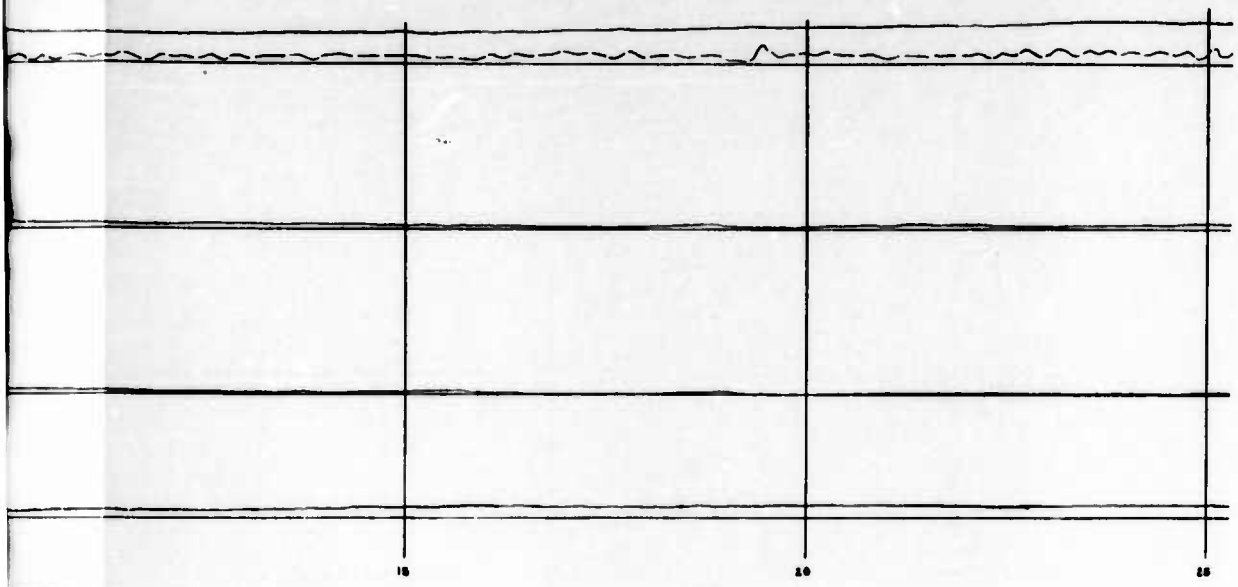


FIGURE 91. LONGITUDINAL DYNAMIC STABIL

...SF S/N 68-10776
...0 POWER PACKAGE

...INAL C.G. LOCATION ...GE STATION (IN.)	ROTOR SPEED (R.P.M.)	AIRSPEED (KCAS)	FLIGHT CONDITION
...9	512	88	LEVEL FLIGHT



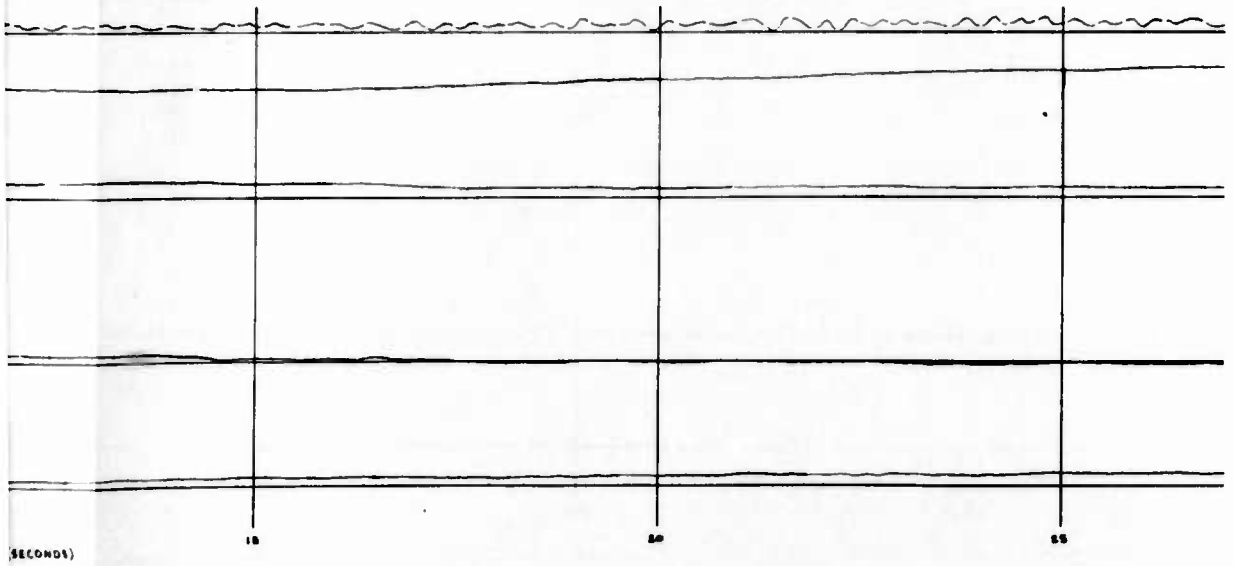
...ECONDS)

...TUDINAL DYNAMIC STABILITY

...SAF S/N 68-10776
...400 POWER PACKAGE

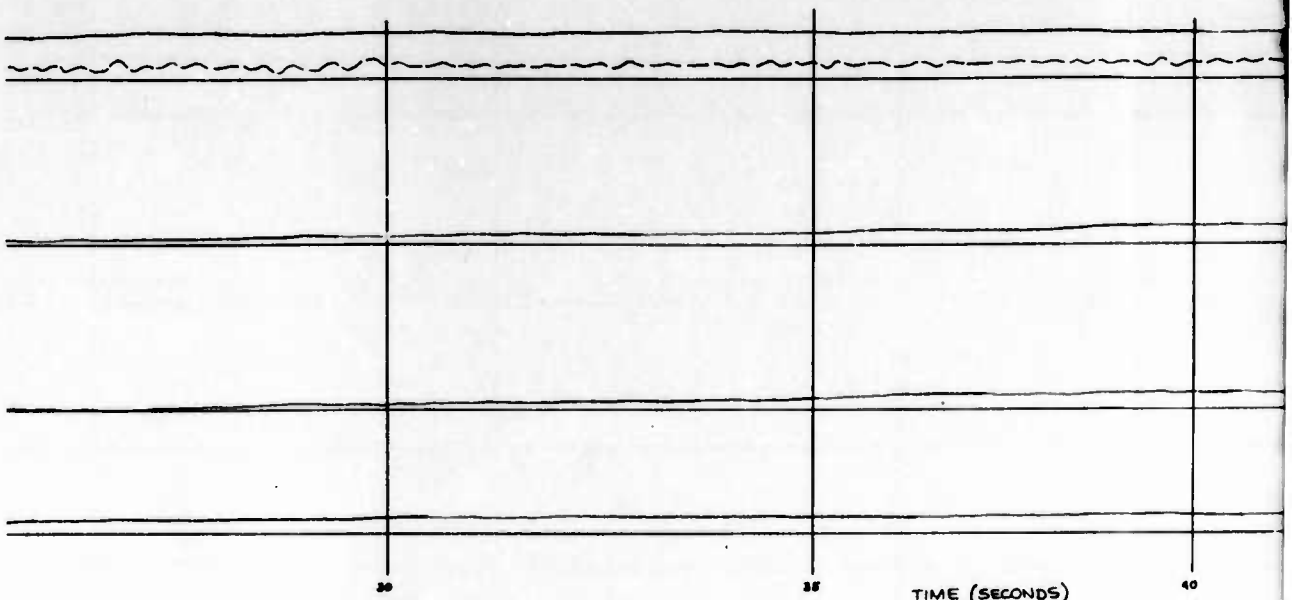
...NTUDINAL C.G. LOCATION ...ELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
137.9	513	104	LEVEL FLIGHT

...AL STORES.

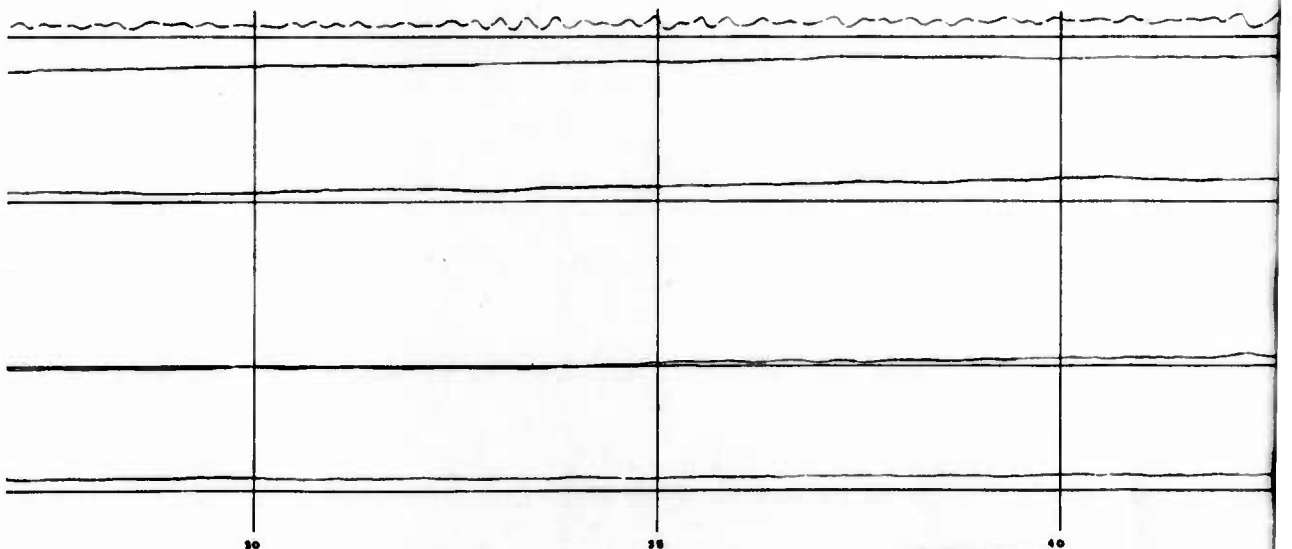


(SECONDS)

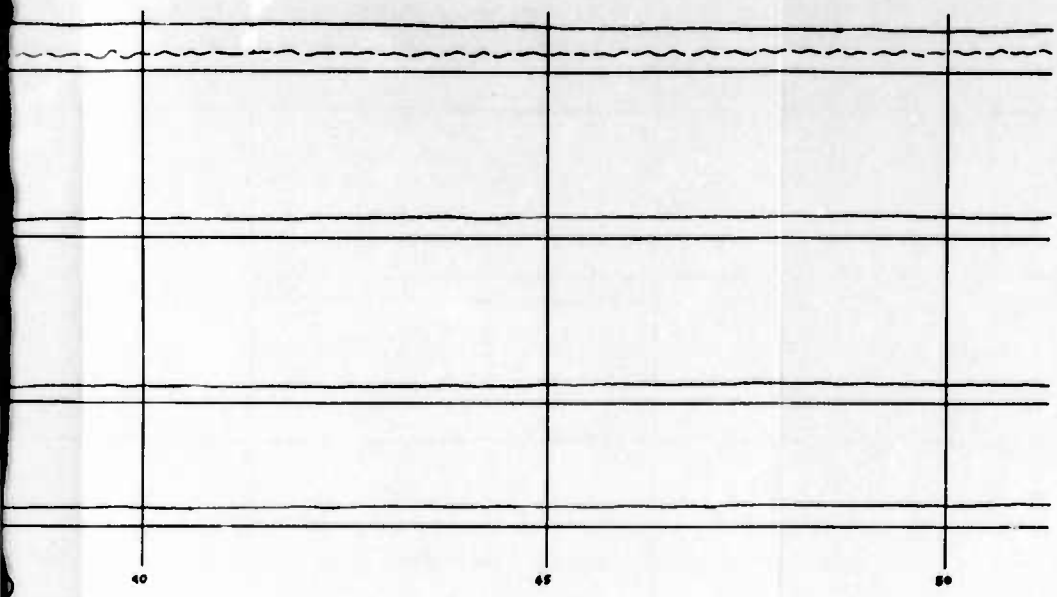
...AL DYNAMIC STABILITY



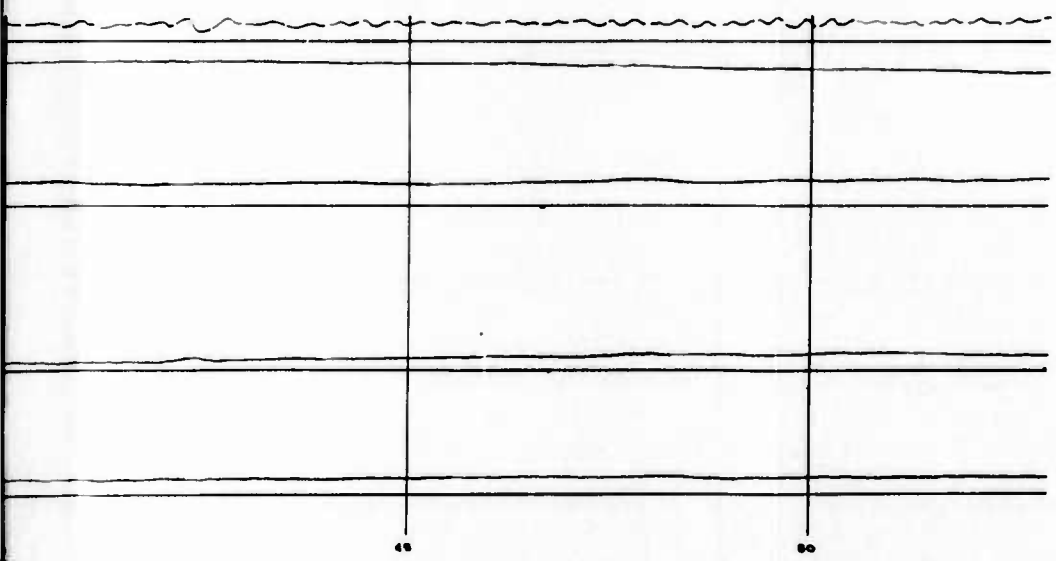
TIME (SECONDS)
FIGURE 90 CONCLUDED



TIME (SECONDS)
FIGURE 91 CONCLUDED



CLUDED



ED

12

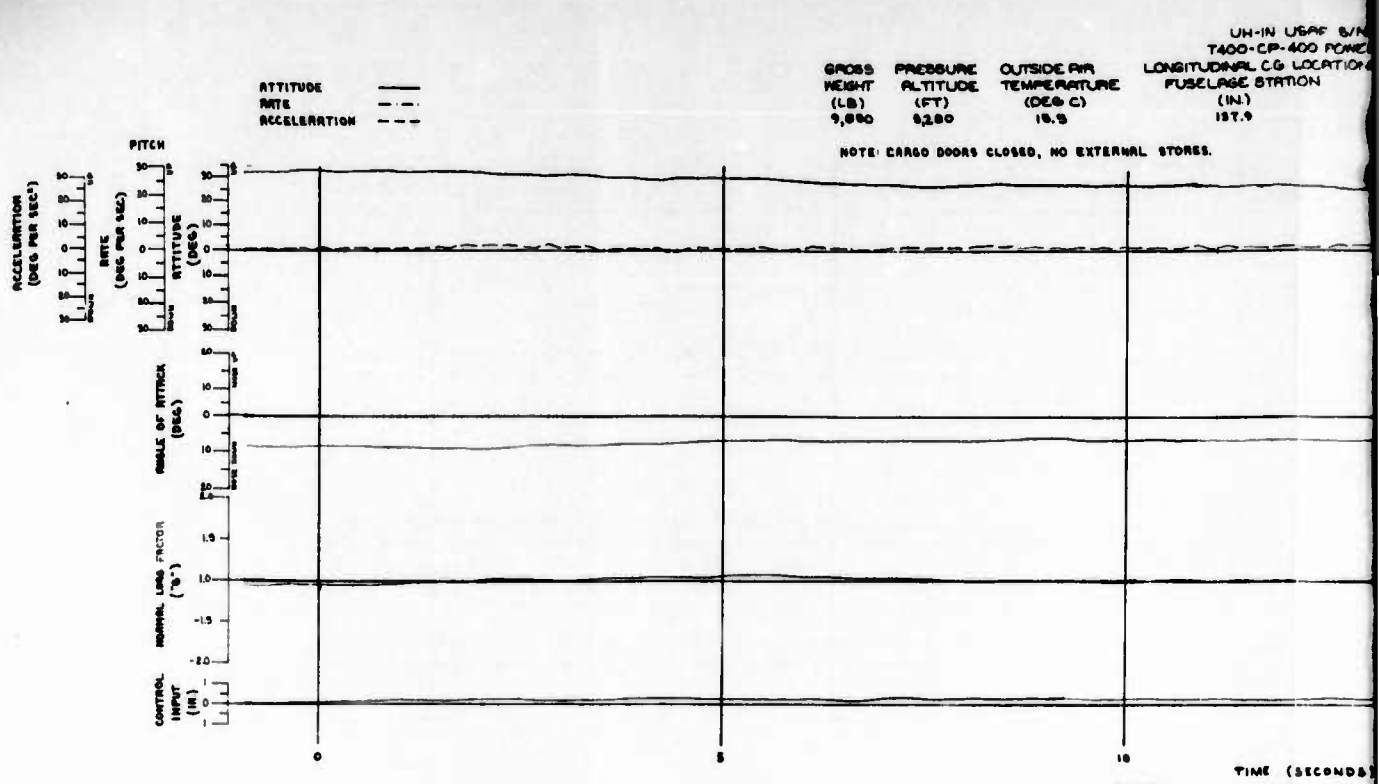


FIGURE 92. LONGITUDINAL

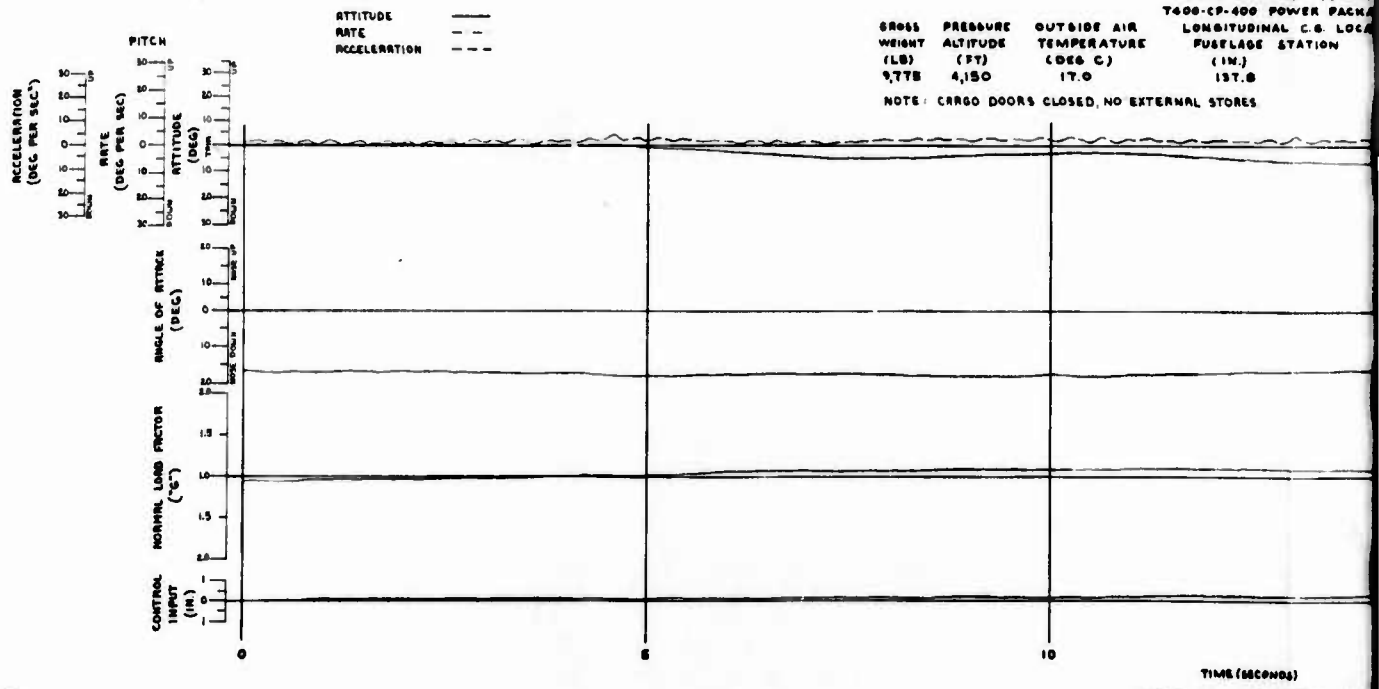
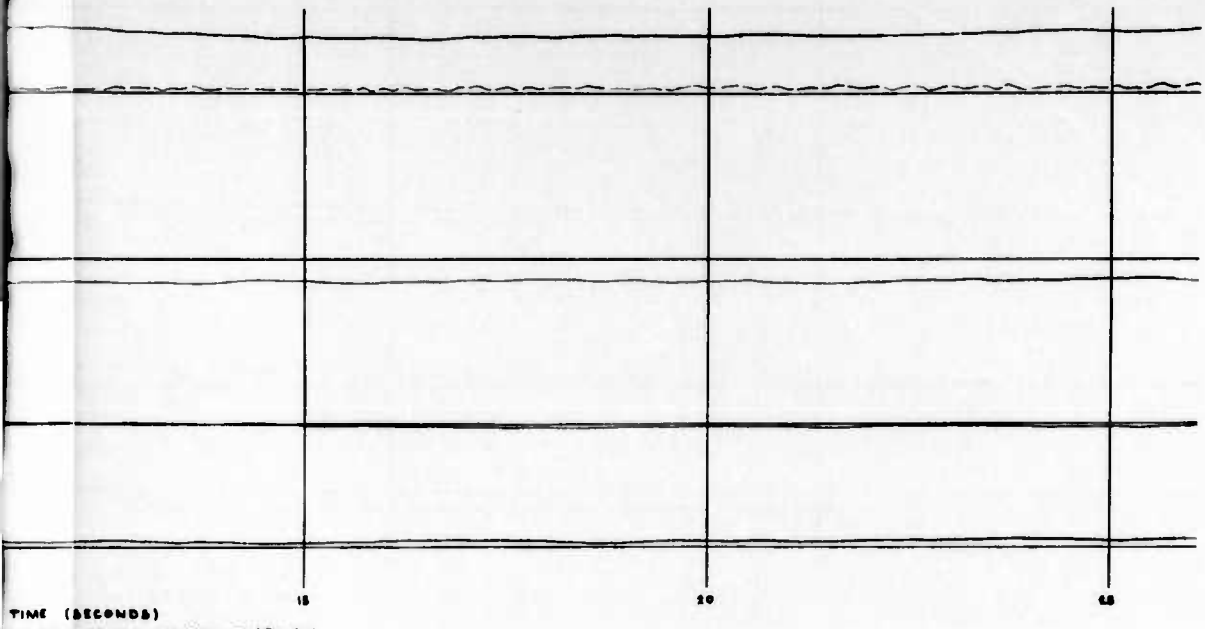


FIGURE 93. LONGITUDINAL DYN

N-IN USAF S/N 68-10776
)-CP-400 POWER PACKAGE

L C.G. LOCATION STATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
)			
9	910	69	DESCENT



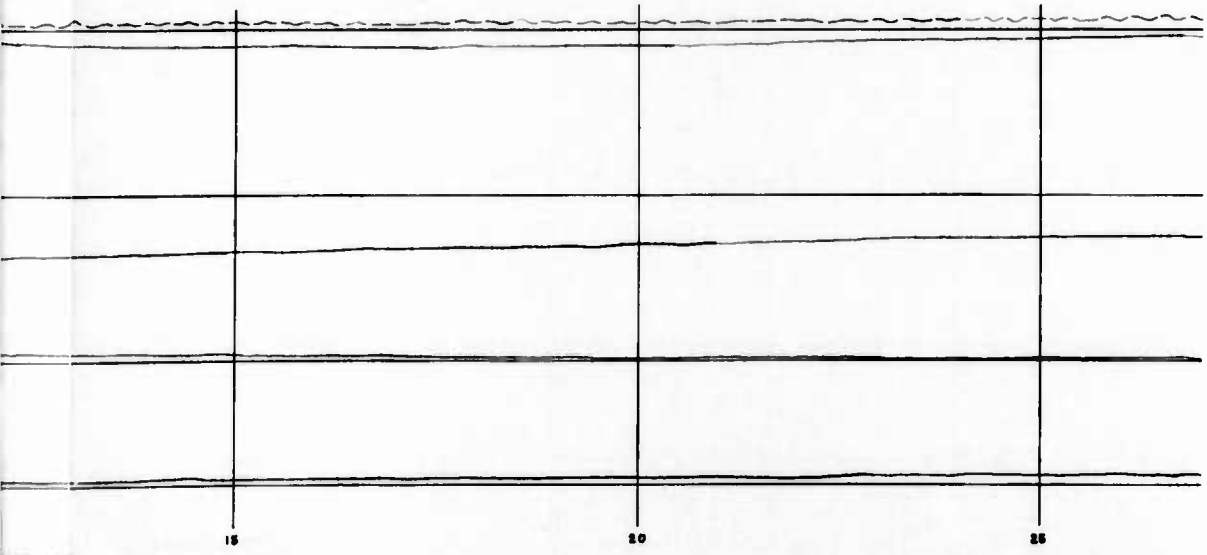
TIME (SECONDS)

LONGITUDINAL DYNAMIC STABILITY

USAF S/N 68-10776
400 POWER PACKAGE

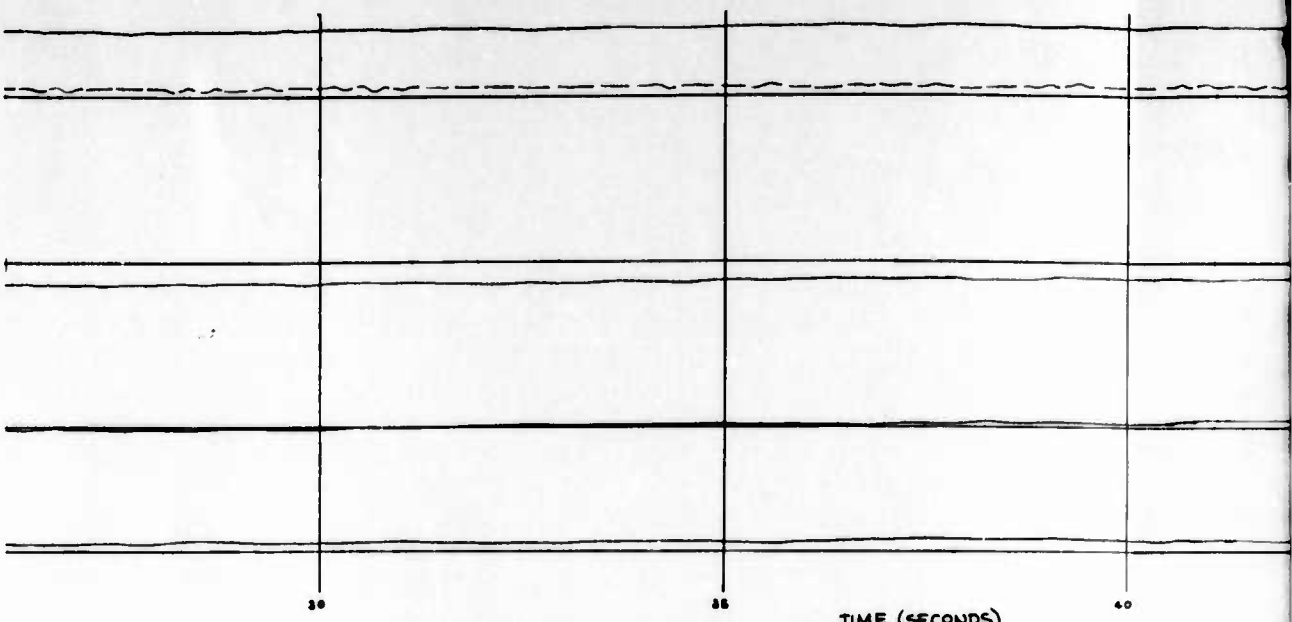
TUDINAL C.G. LOCATION LADE STATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
N.)			
T.G	915	69	AUTOROTATION

DRES

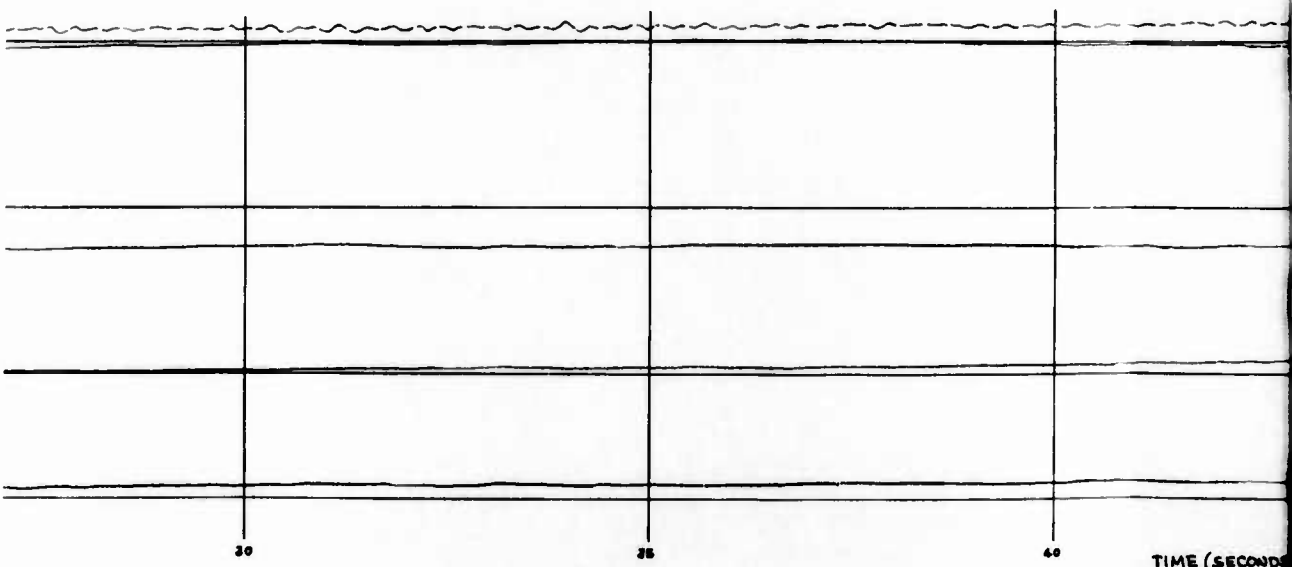


E (SECONDS)

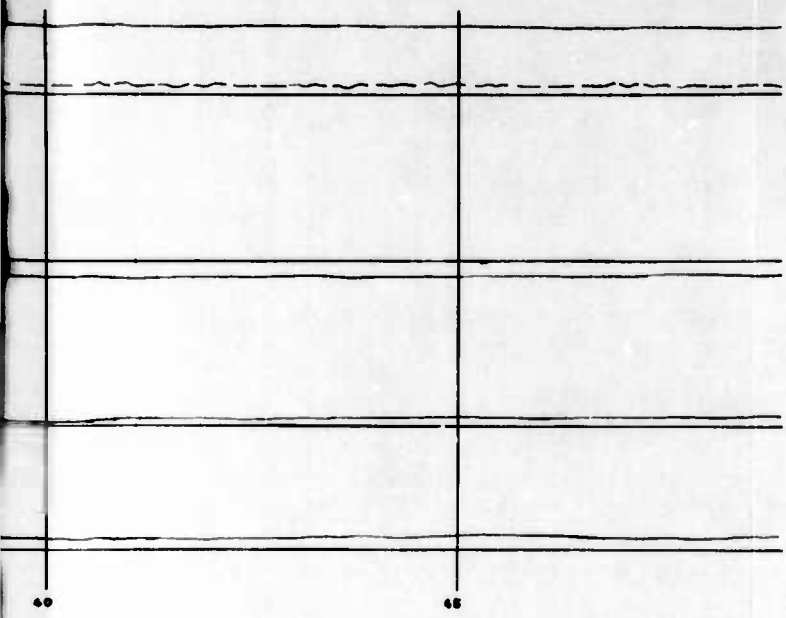
LONGITUDINAL DYNAMIC STABILITY



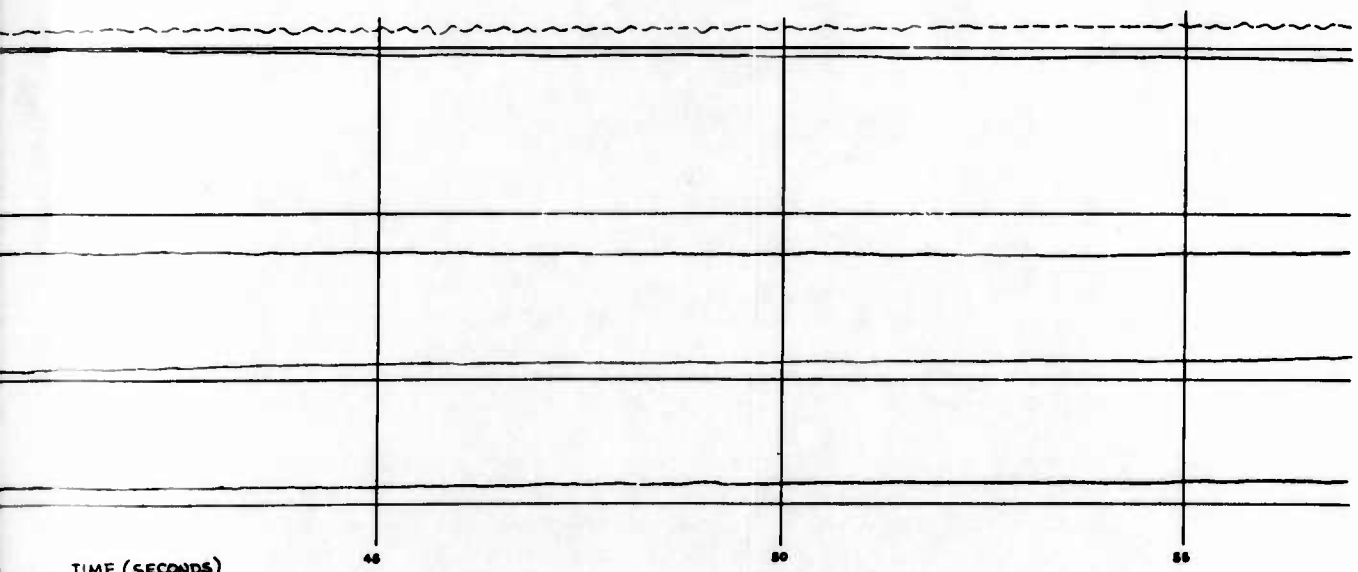
TIME (SECONDS)
FIGURE 92 CONCLUDED



TIME (SECONDS
FIGURE 93 CO

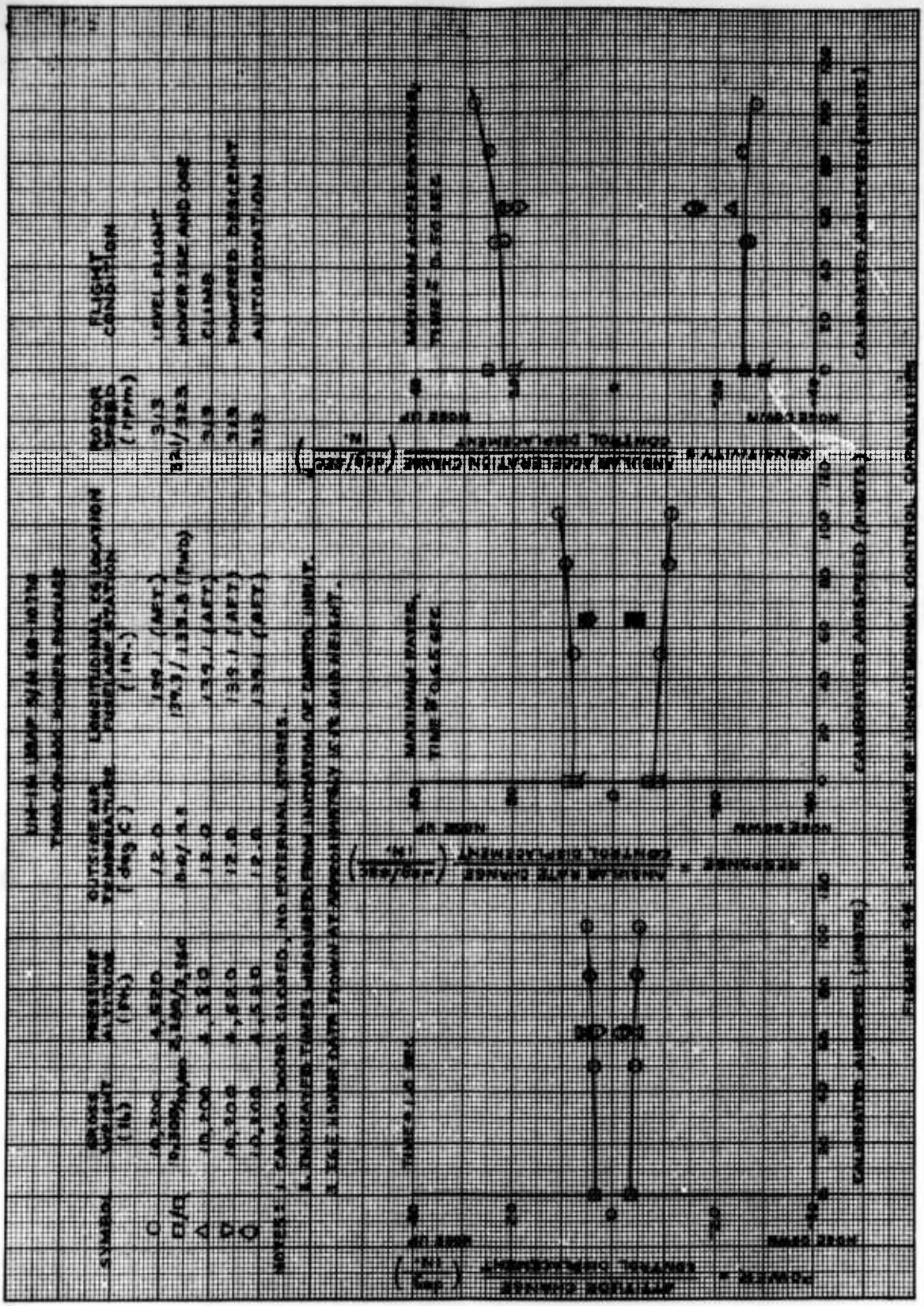


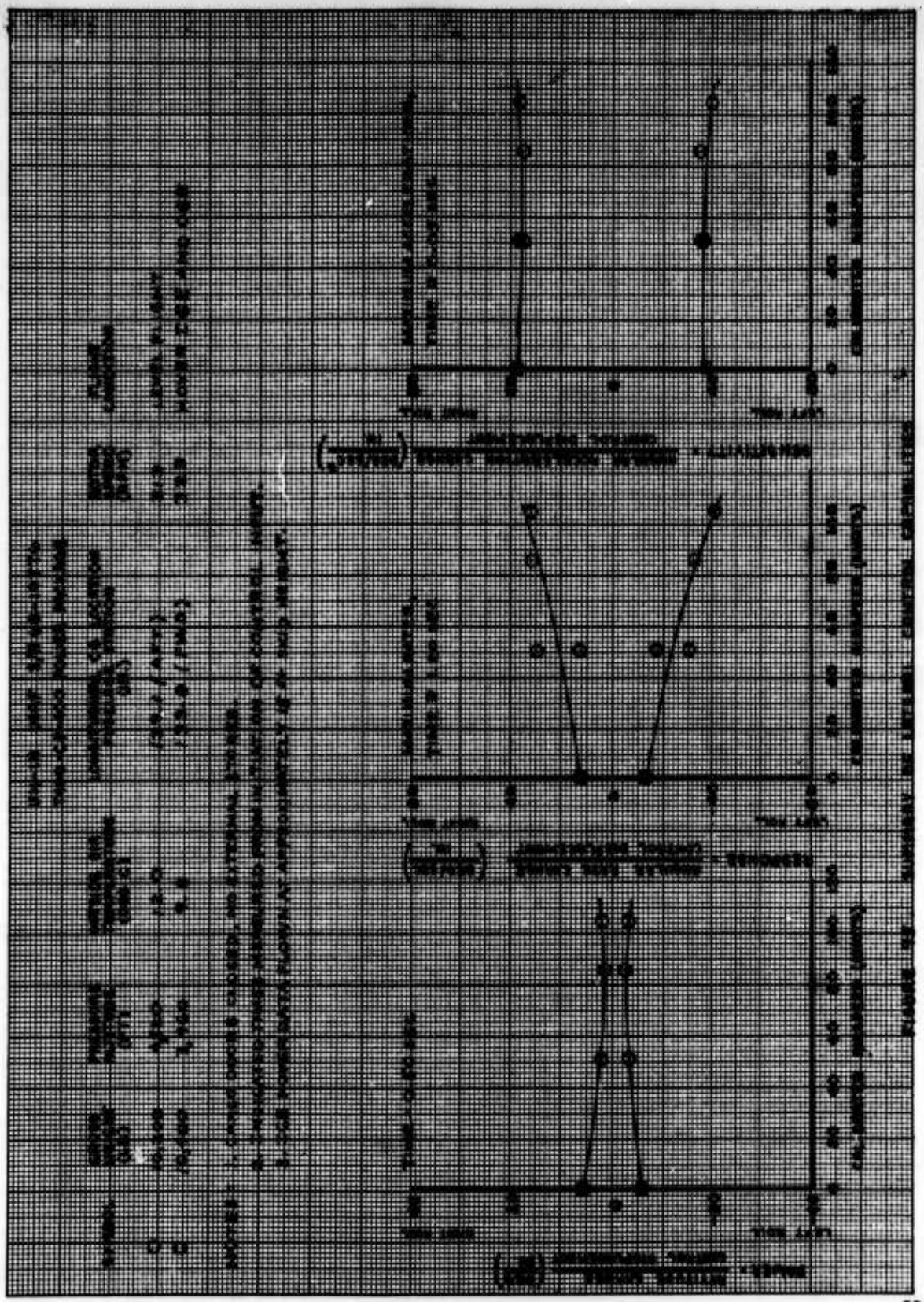
12

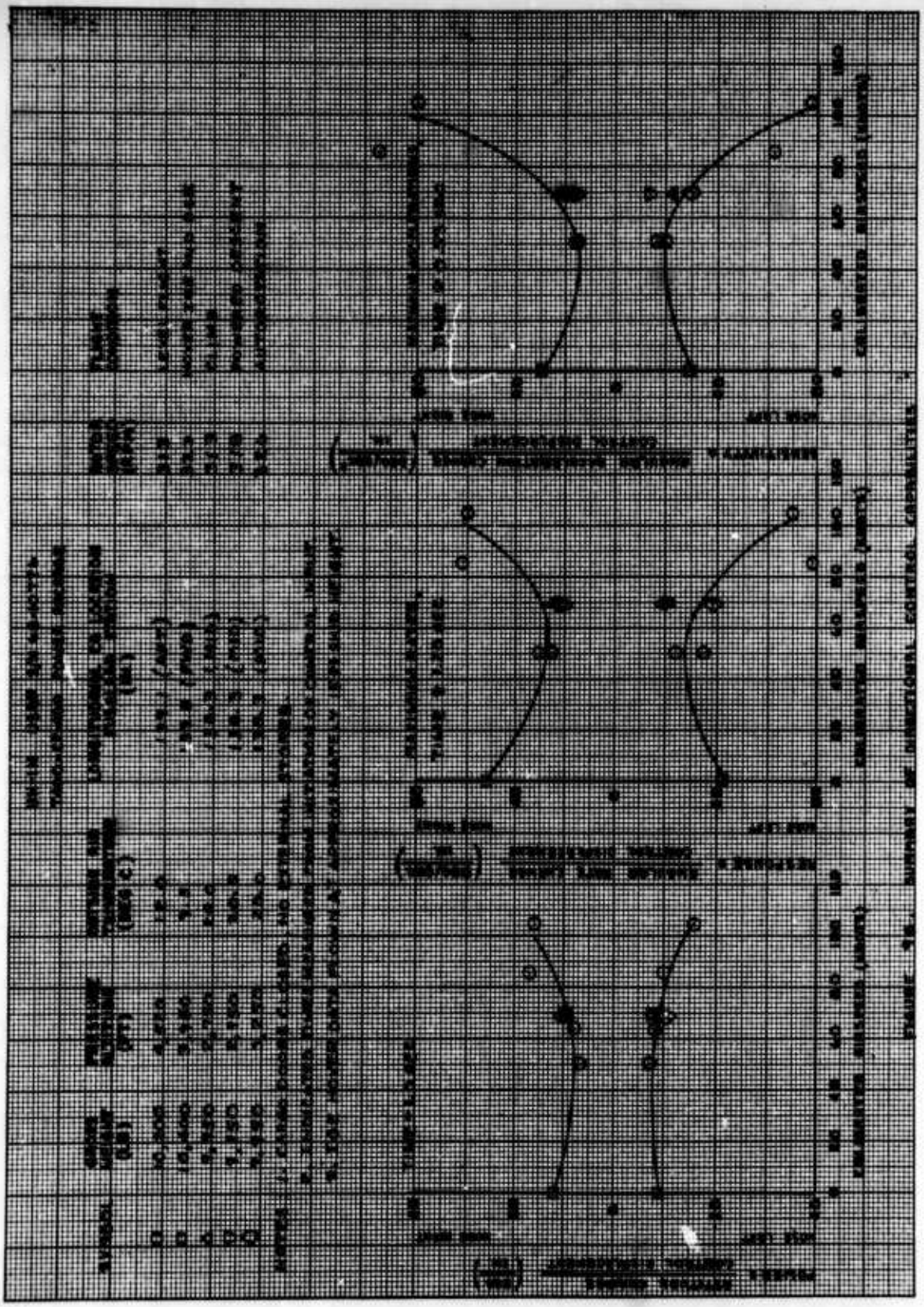


TIME (SECONDS)

FIGURE 93 CONCLUDED







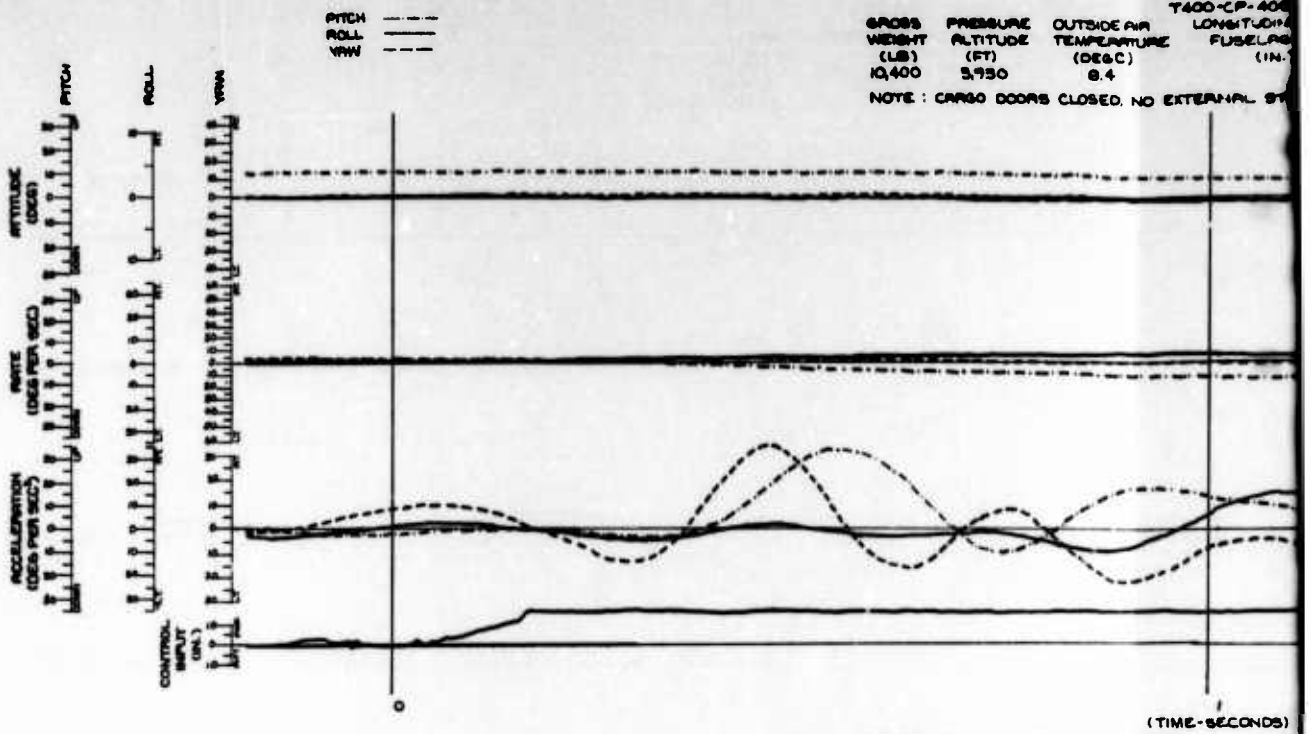


FIGURE 17. RESPONSE TO A FORWARD LONGI

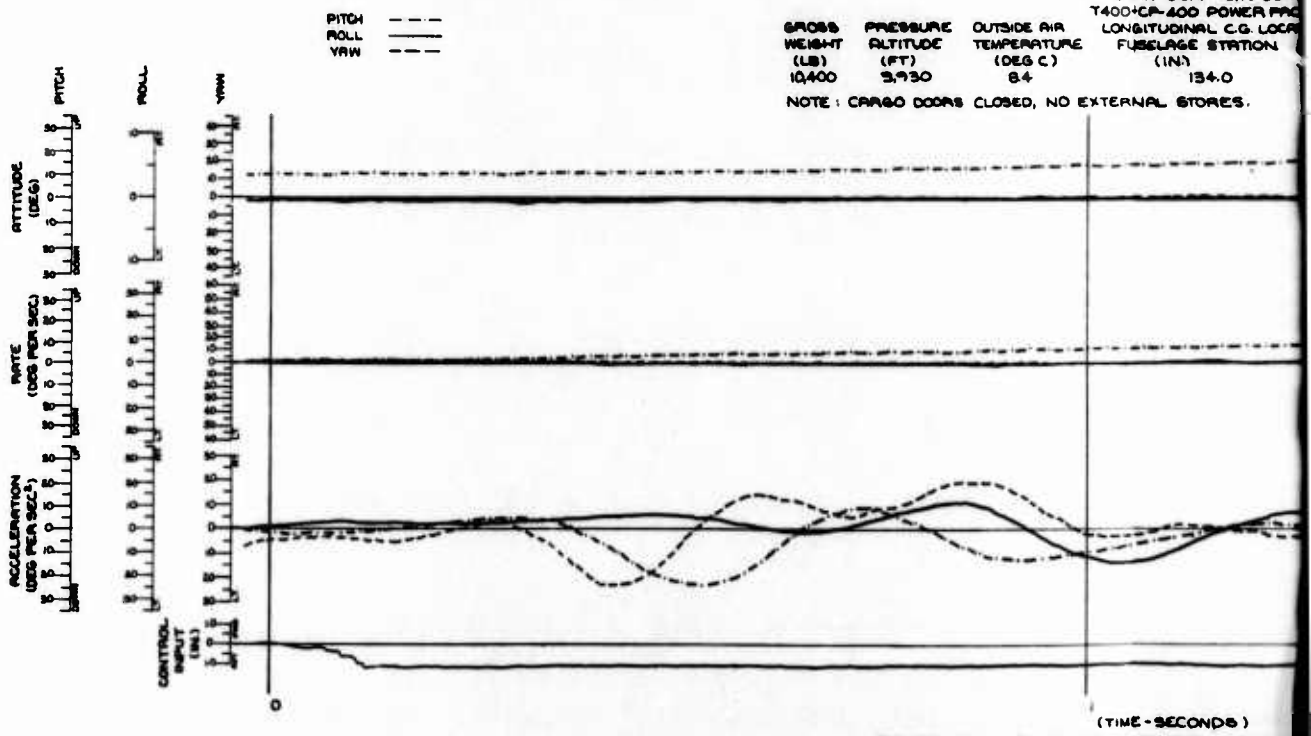
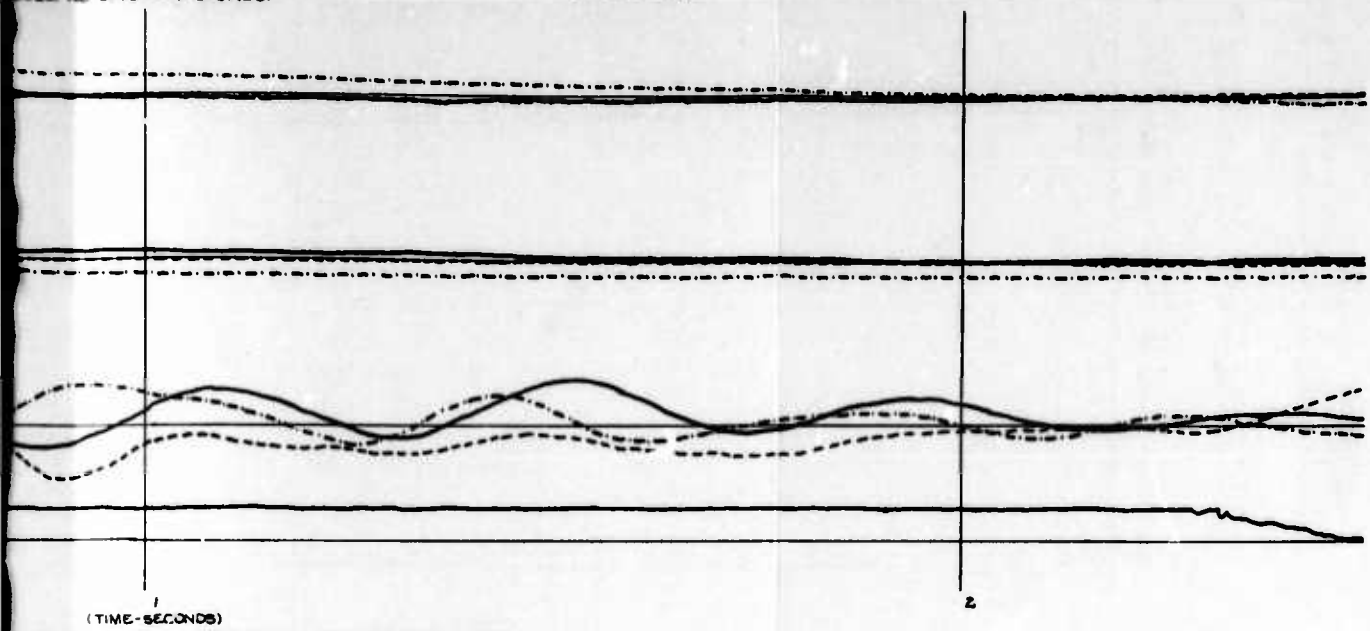


FIGURE 18. RESPONSE TO AN AFT LONGITUD

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LONGITUDINAL C.G. LOCATION
FUSELAGE STATION (IN.) 134.0
ROTOR SPEED (RPM) 323
AIRSPEED (KCAS) 0
FLIGHT CONDITION HOVER, IGE 15 FT SKID HEIGHT

...SEC) 0.4
...SED. NO EXTERNAL STORES.

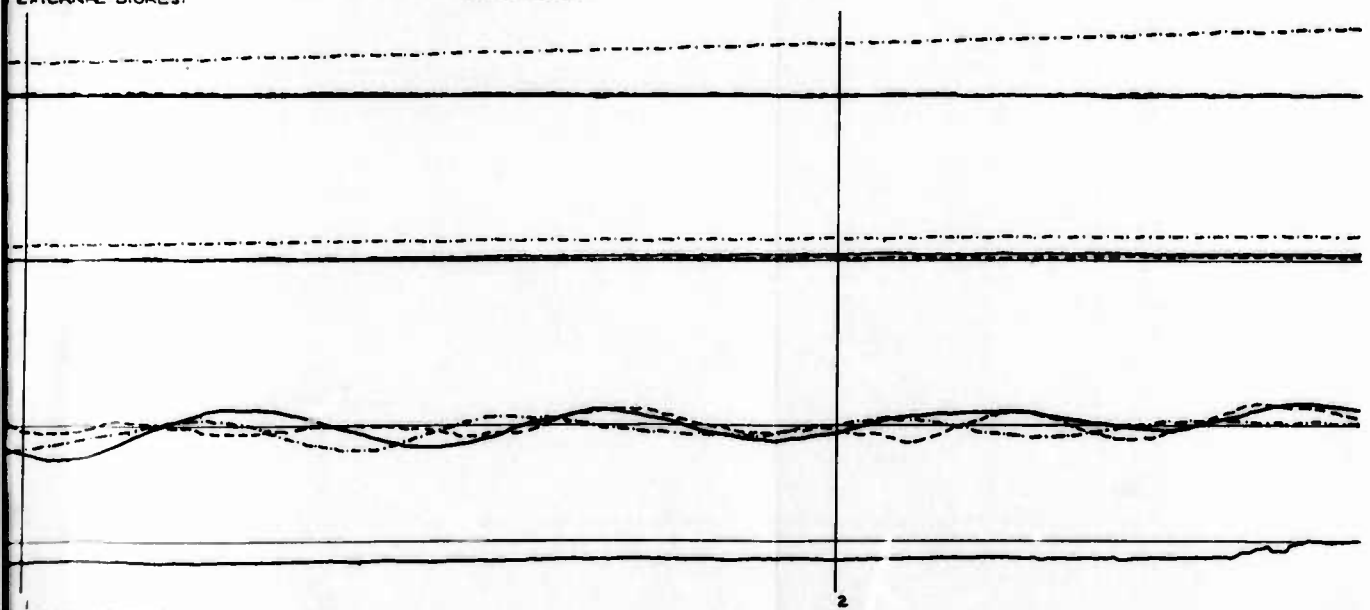


(TIME-SECONDS)

...E TO A FORWARD LONGITUDINAL STEP CONTROL INPUT

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE
LONGITUDINAL C.G. LOCATION
FUSELAGE STATION (IN.) 134.0
ROTOR SPEED (RPM) 323
AIRSPEED (KCAS) 0
FLIGHT CONDITION HOVER, IGE 15 FT SKID HEIGHT

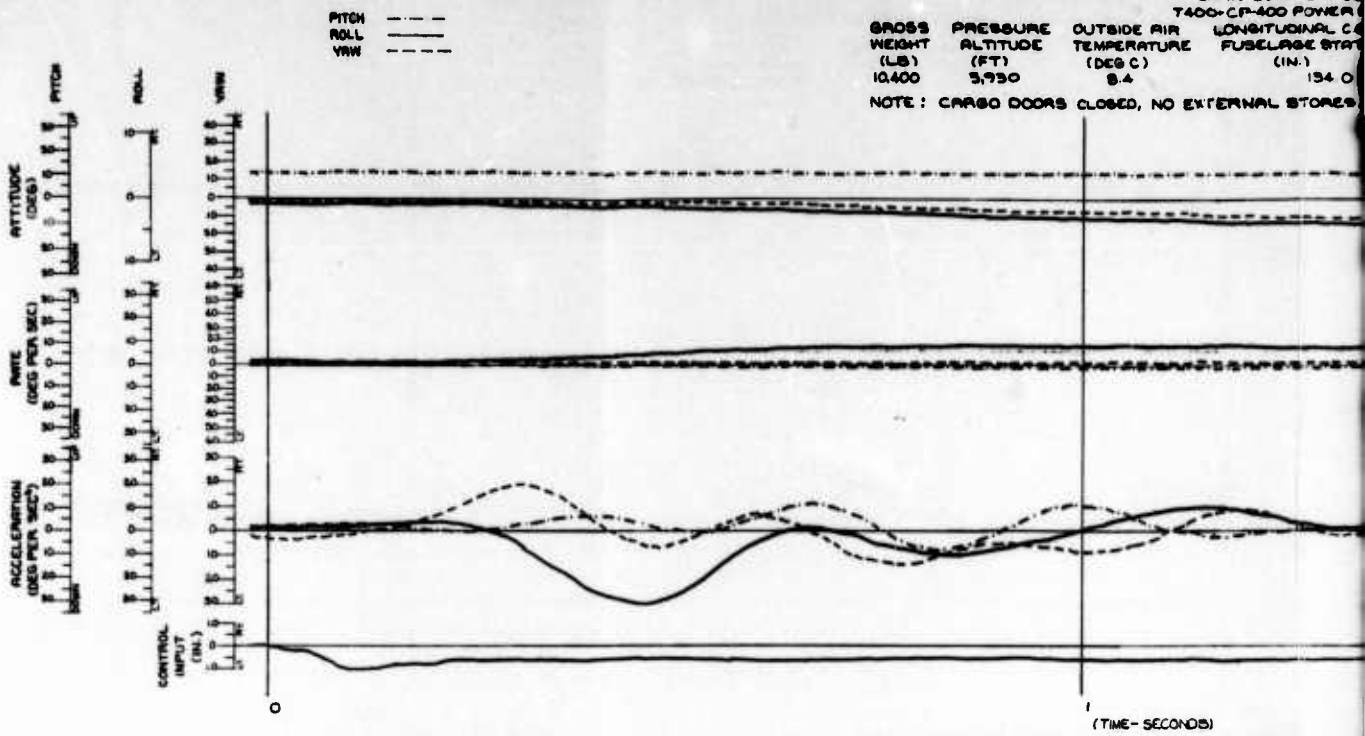
EXTERNAL STORES.



(TIME - SECONDS)

...E TO AFT LONGITUDINAL STEP CONTROL INPUT

12

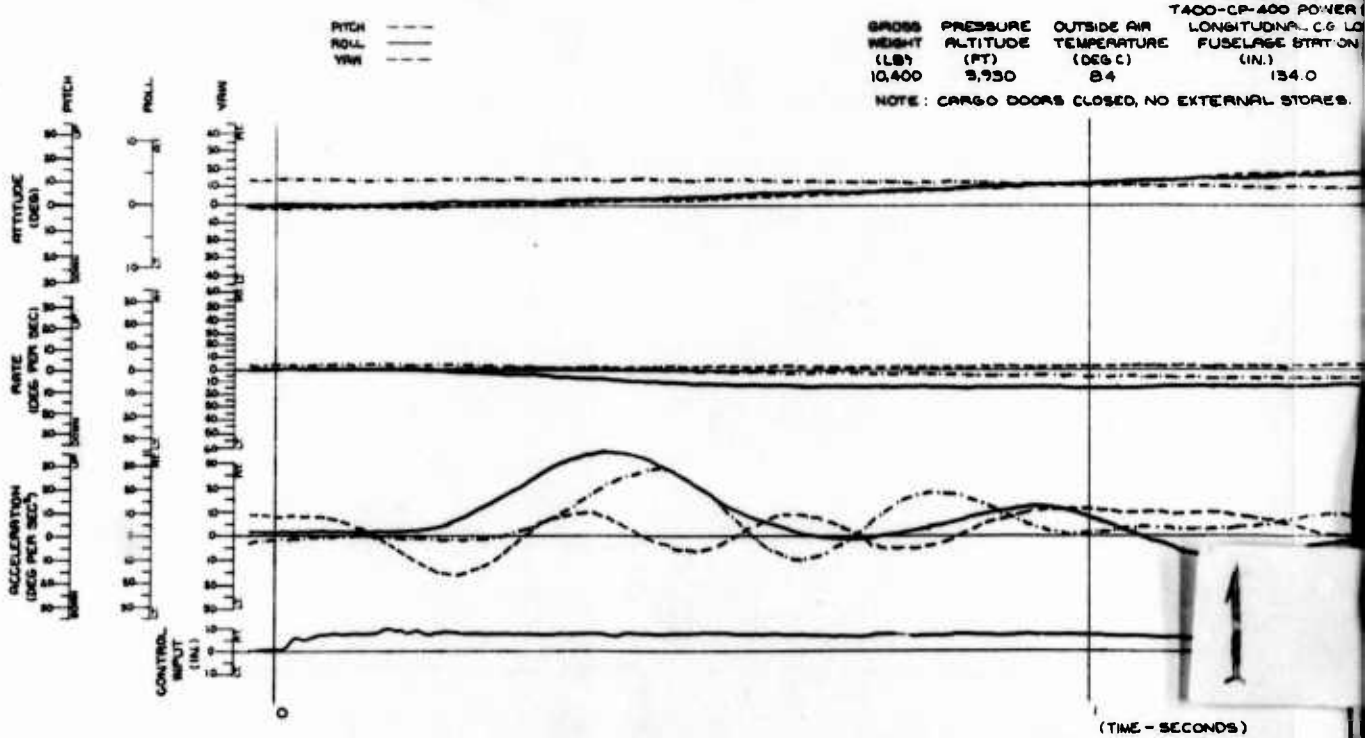


UH-1N USAF S/N 6
T400-CP-400 POWER
LONGITUDINAL C
FUSELAGE STA

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	FUSELAGE STATION (IN.)
10,400	3,930	8.4	134.0

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

FIGURE 99. RESPONSE TO A LEFT LATERAL STEP CONT



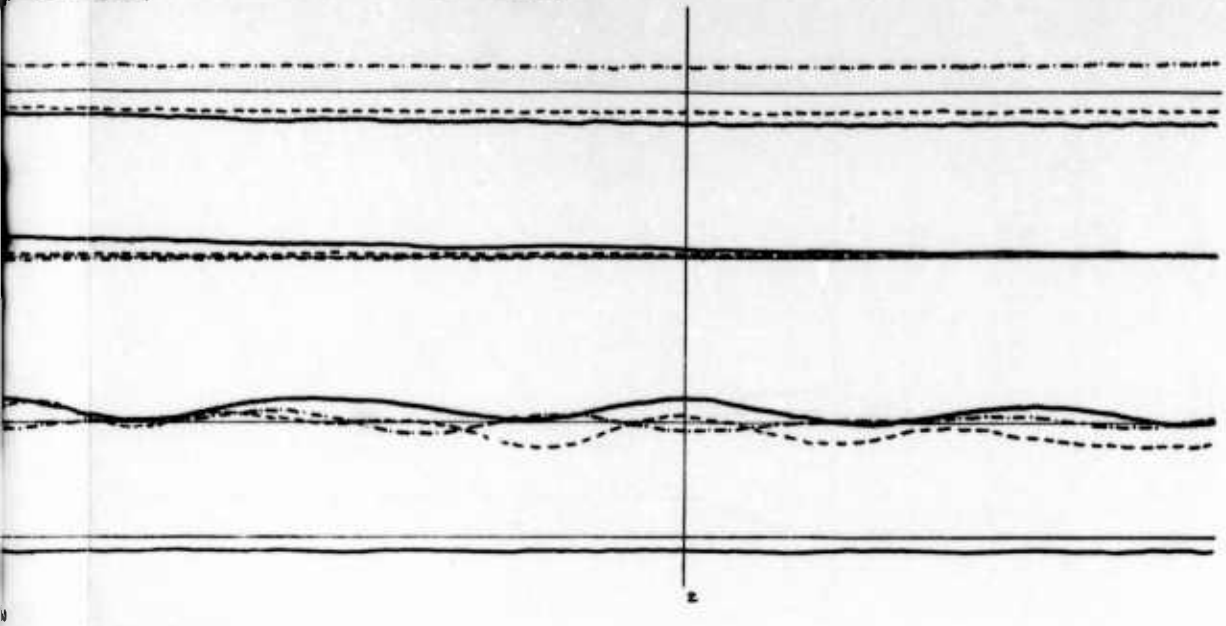
UH-1N USAF S/N 6
T400-CP-400 POWER
LONGITUDINAL C.G. LO
FUSELAGE STATION

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	FUSELAGE STATION (IN.)
10,400	3,930	8.4	134.0

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

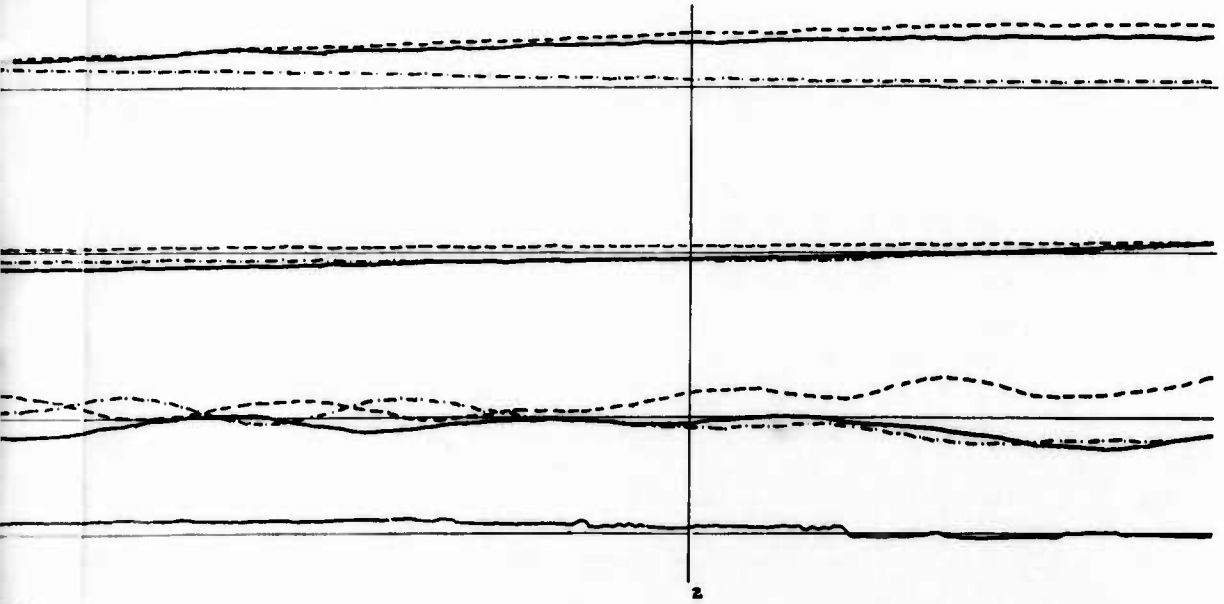
FIGURE 100. RESPONSE TO A RIGHT LATERAL STEP

-IN USAF S/N 68-10776
-CP-400 POWER PACKAGE
LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.) | ROTOR SPEED (RPM) | AIRSPEED (KCAS) | FLIGHT CONDITION
134.0 | 323 | 0 | HOVER, IGE, 15 FT SKID HEIGHT
ERNAL STORES.



ERAL STEP CONTROL INPUT

H-IN USAF S/N 68-10776
D-CP-400 POWER PACKAGE
NGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.) | ROTOR SPEED (RPM) | AIRSPEED (KCAS) | FLIGHT CONDITION
134.0 | 323 | 0 | HOVER, IGE, 15 FT SKID HEIGHT
ERNAL STORES.



LATERAL STEP CONTROL INPUT

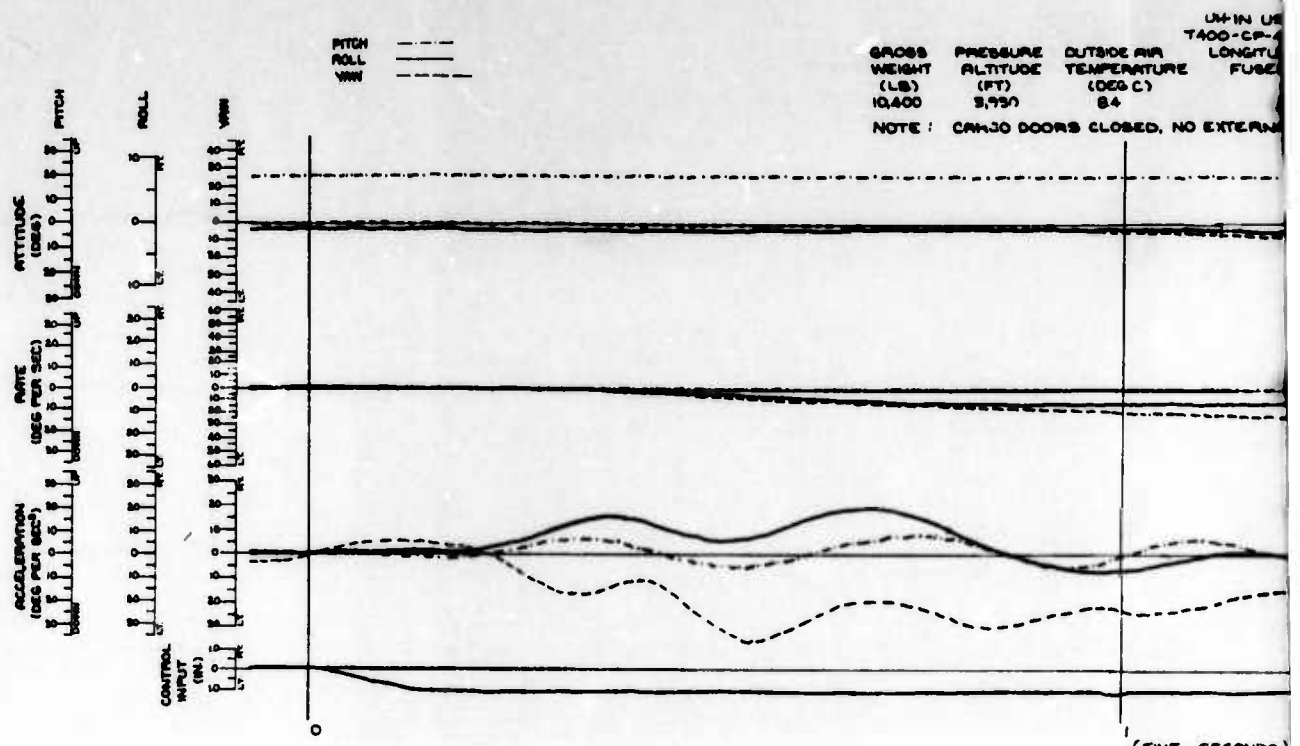


FIGURE 101. RESPONSE TO A LEFT DIR

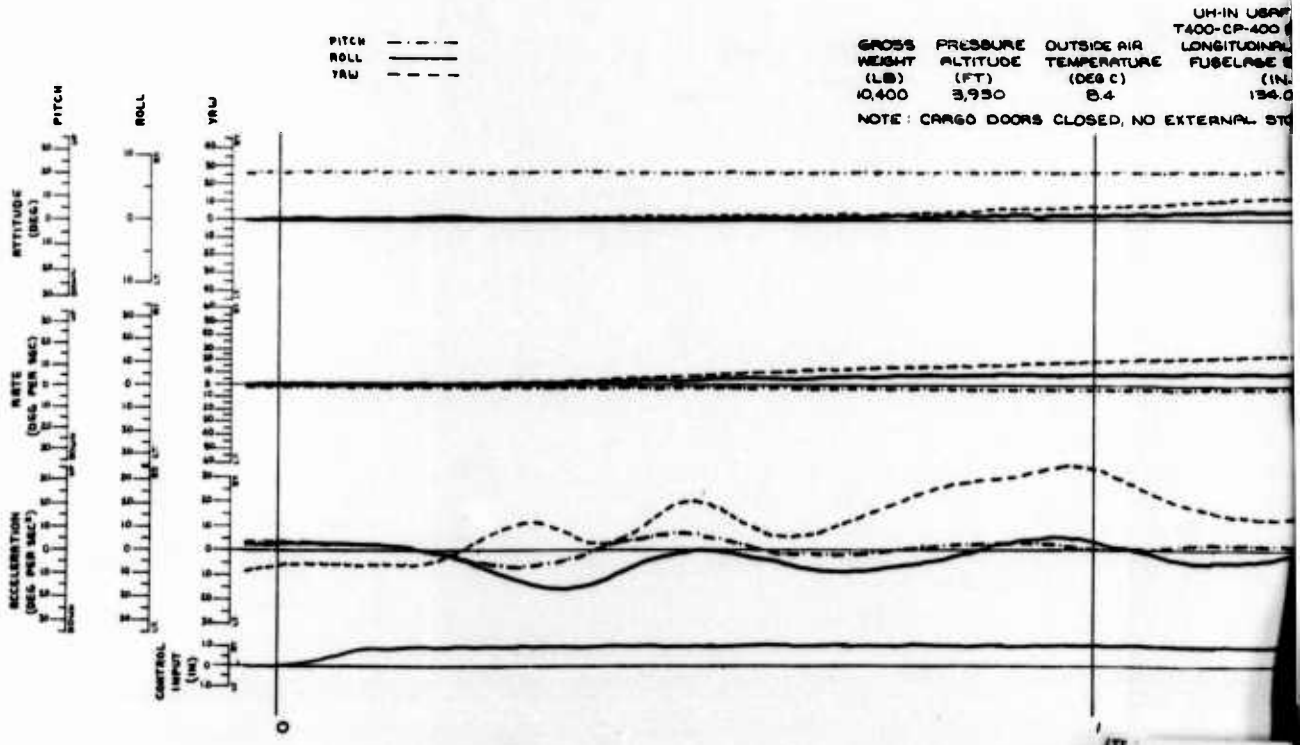
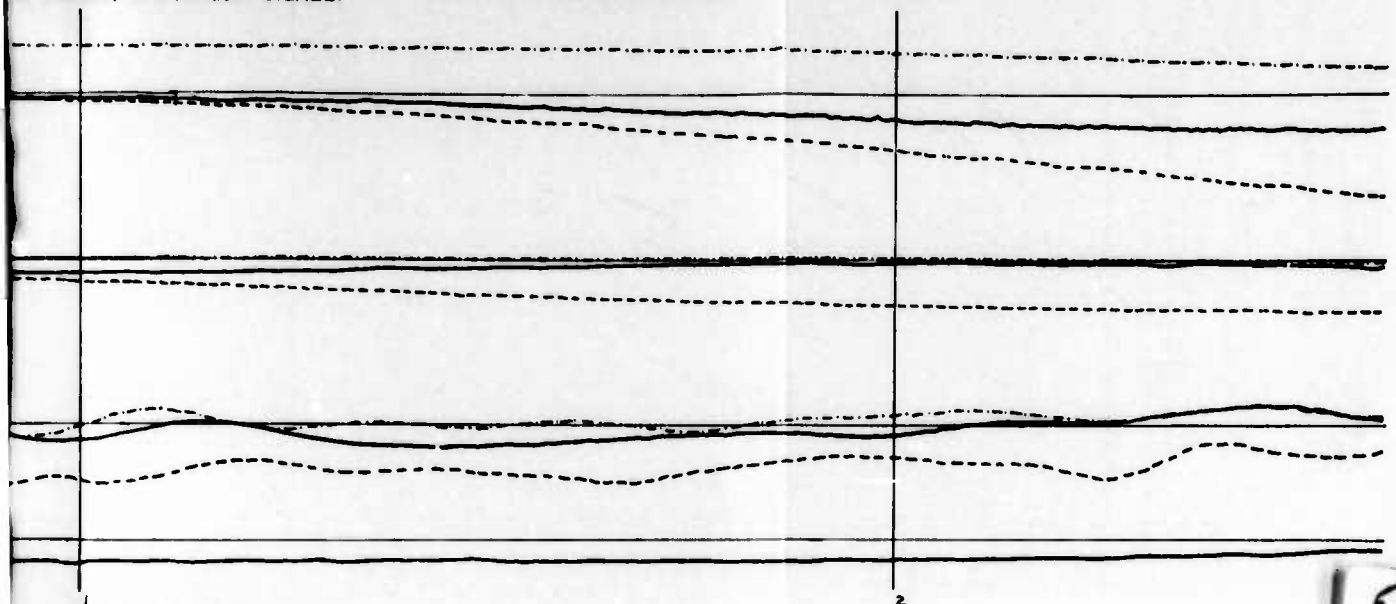


FIGURE 102. RESPONSE T

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
8.4	194.0	323	0	HOVER, IGE. 15 FT SKID HEIGHT

S CLOSED, NO EXTERNAL STORES.



(TIME - SECONDS)

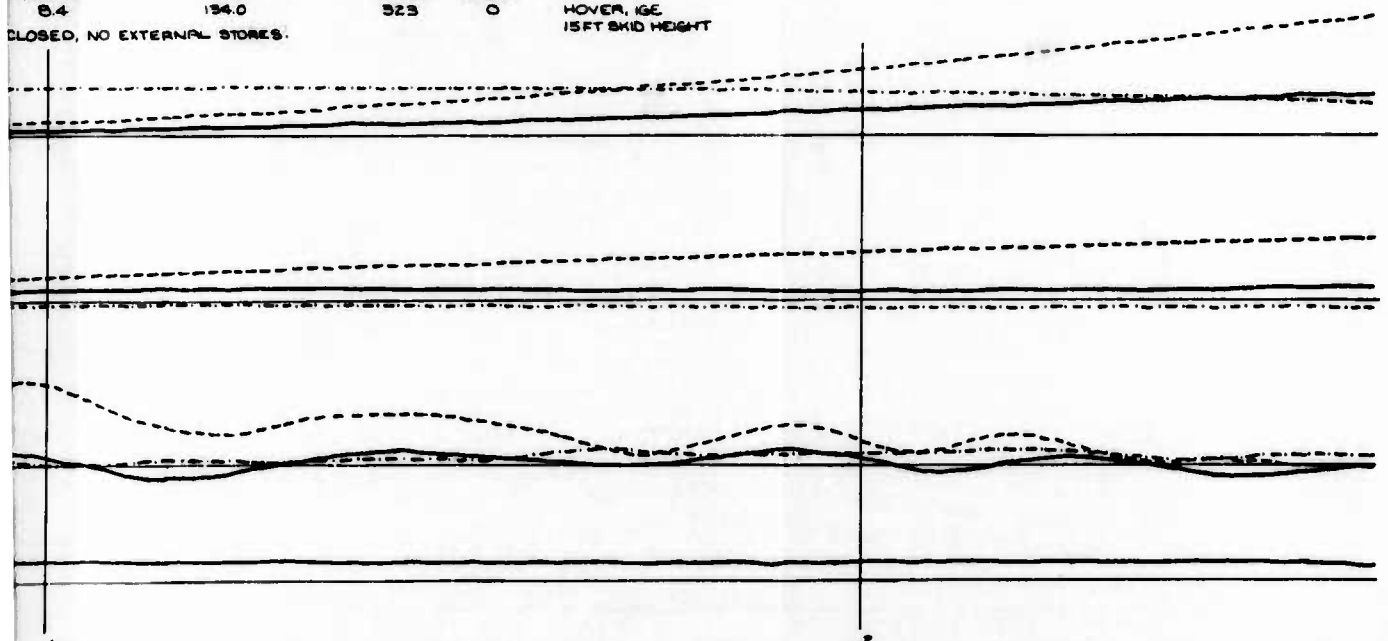
ESPONSE TO A LEFT DIRECTIONAL STEP CONTROL INPUT

12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

UTSIDE AIR EMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
8.4	194.0	323	0	HOVER, IGE. 15FT SKID HEIGHT

CLOSED, NO EXTERNAL STORES.



(TIME SECONDS)

E TO A RIGHT DIRECTIONAL STEP CONTROL INPUT

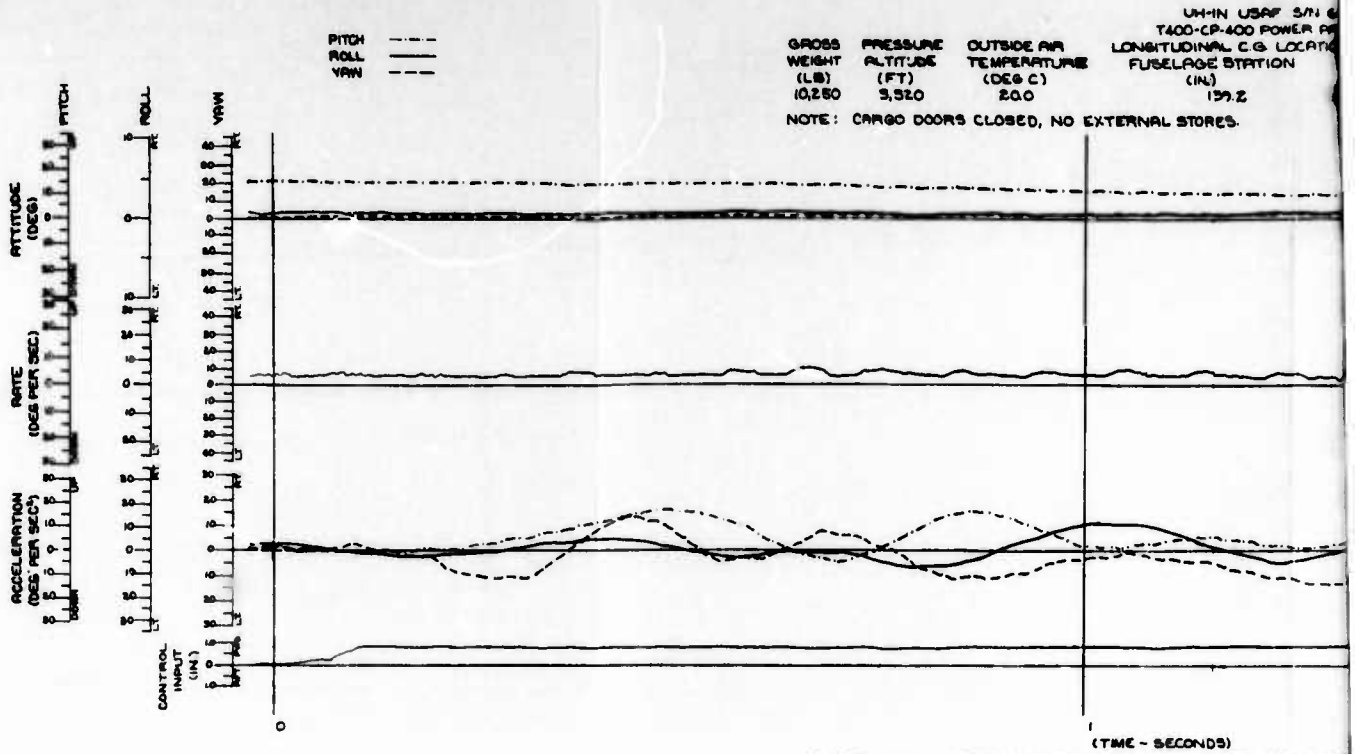


FIGURE 103. RESPONSE TO A FORWARD LONGITUDINAL STE

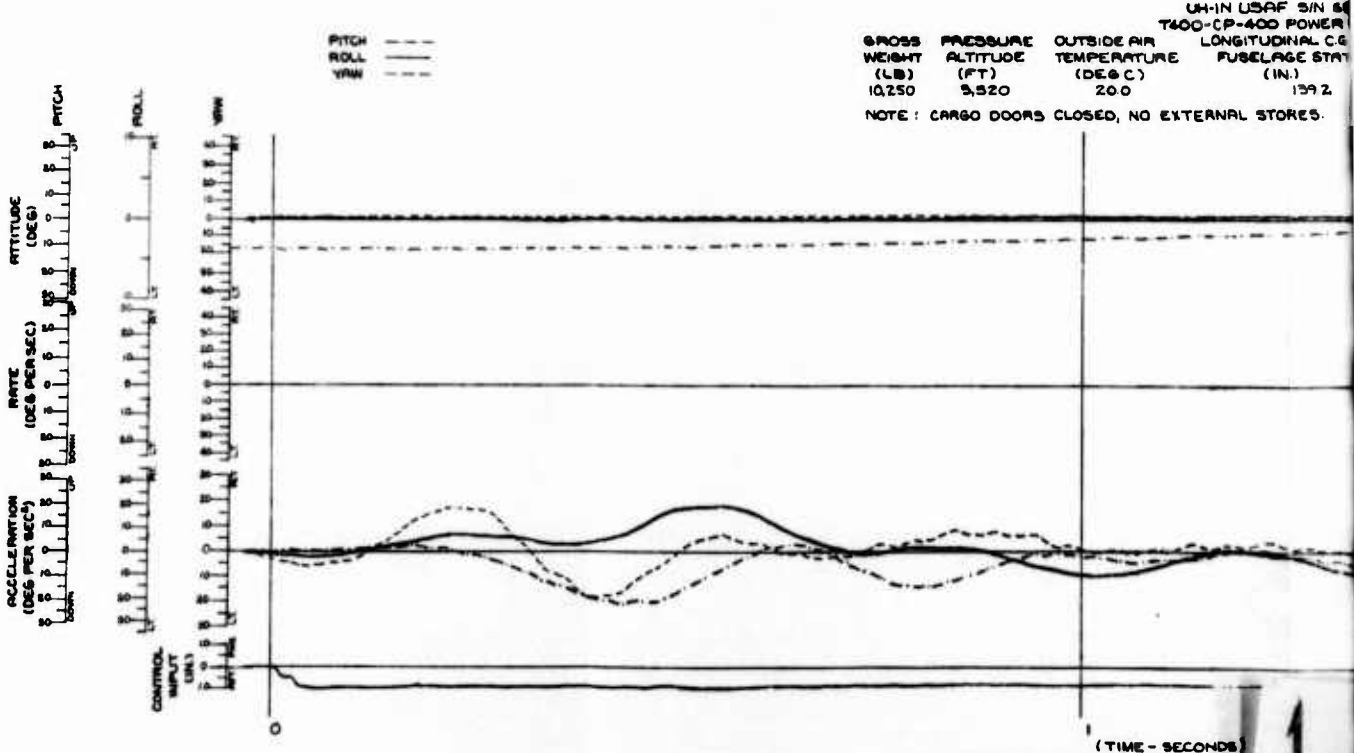
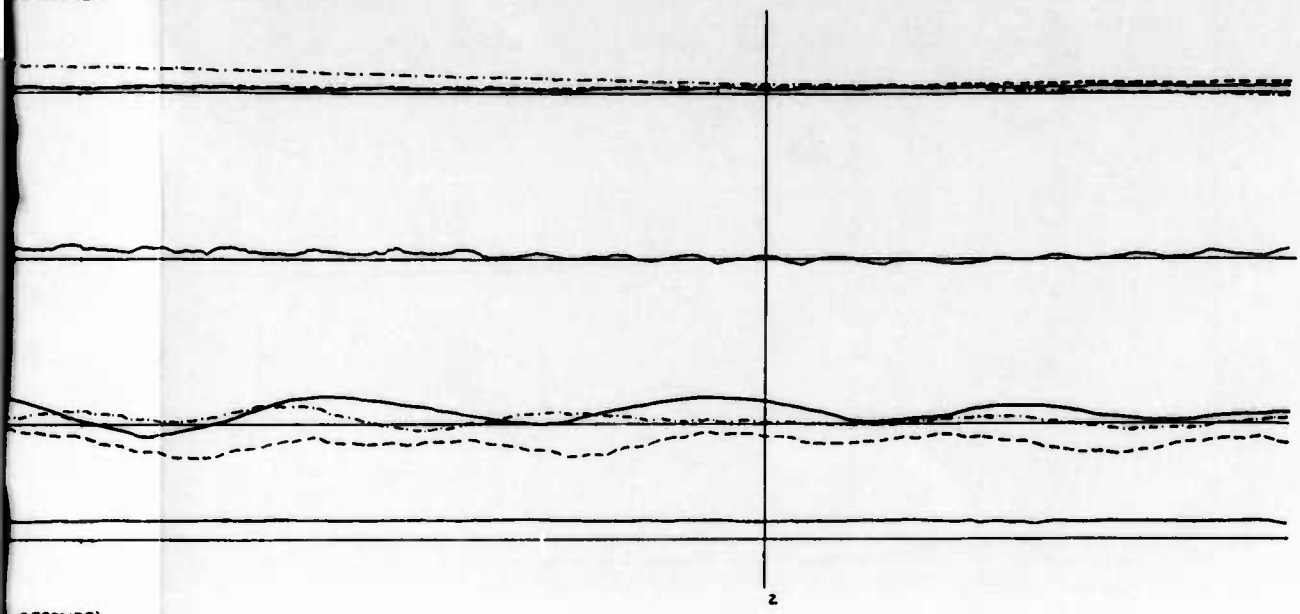


FIGURE 104. RESPONSE TO AN

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

ITUDINAL C.G. LOCATION ELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.2	313	85	LEVEL FLIGHT

L STORES.

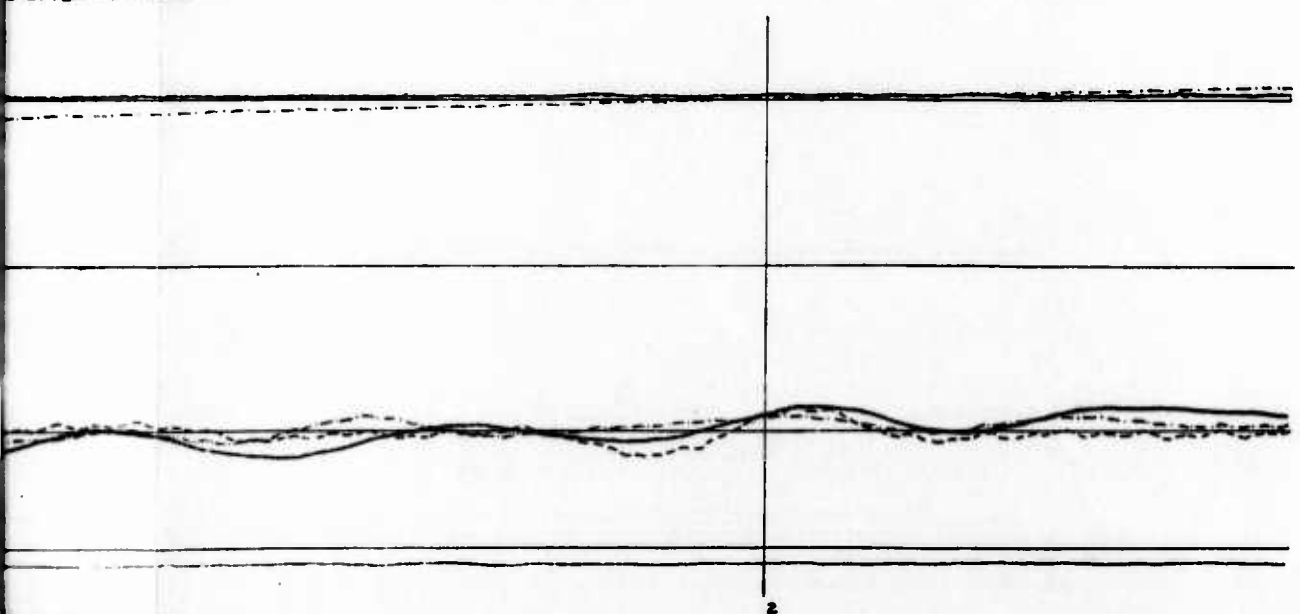


SECONDS)
ARD LONGITUDINAL STEP CONTROL INPUT

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

R URE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	139.2	313	85	LEVEL FLIGHT

O EXTERNAL STORES.



SECONDS)
E TO AN AFT LONGITUDINAL STEP CONTROL INPUT

12

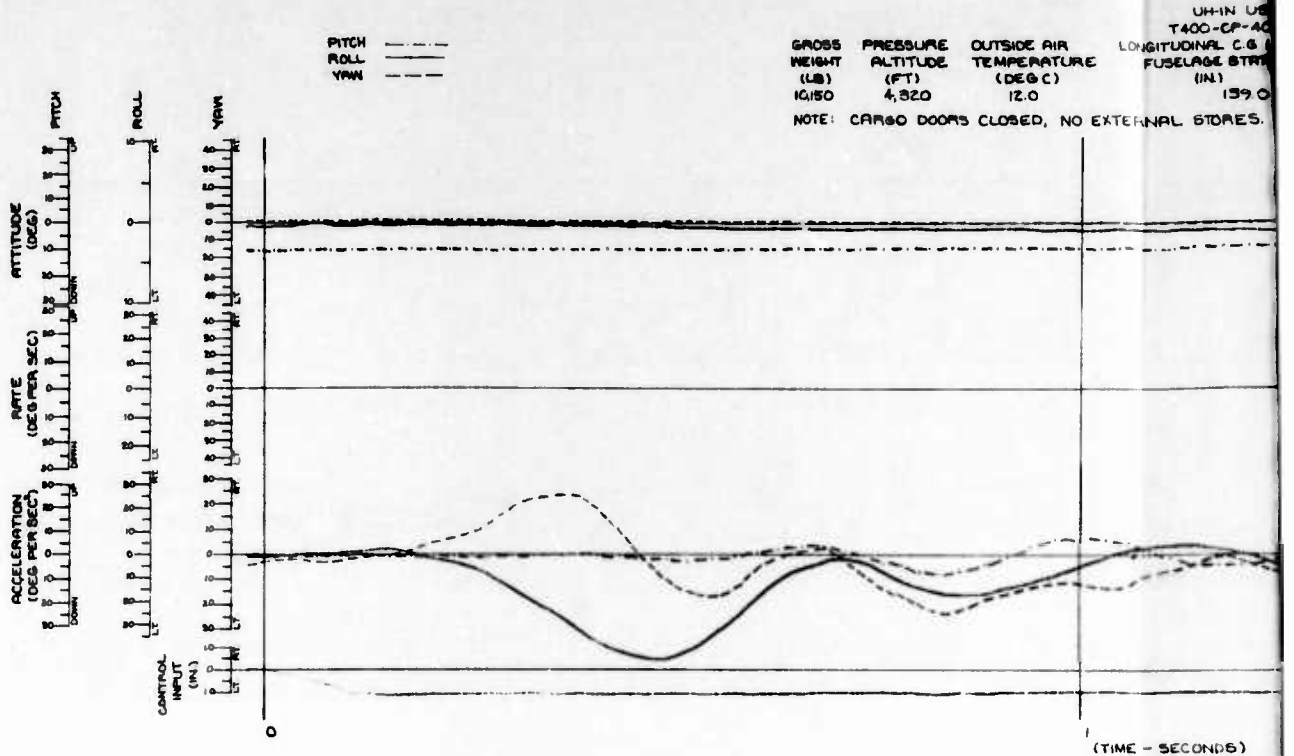


FIGURE 105. RESPONSE TO A LEFT LA

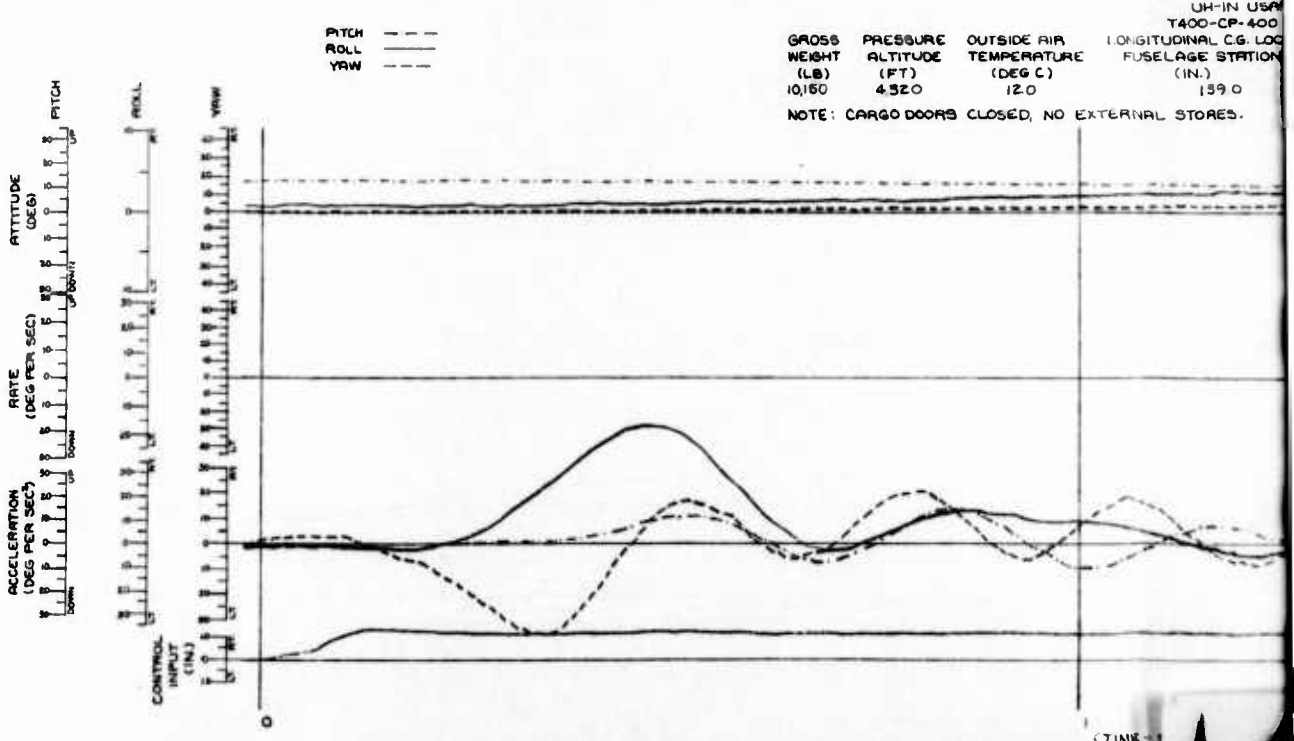
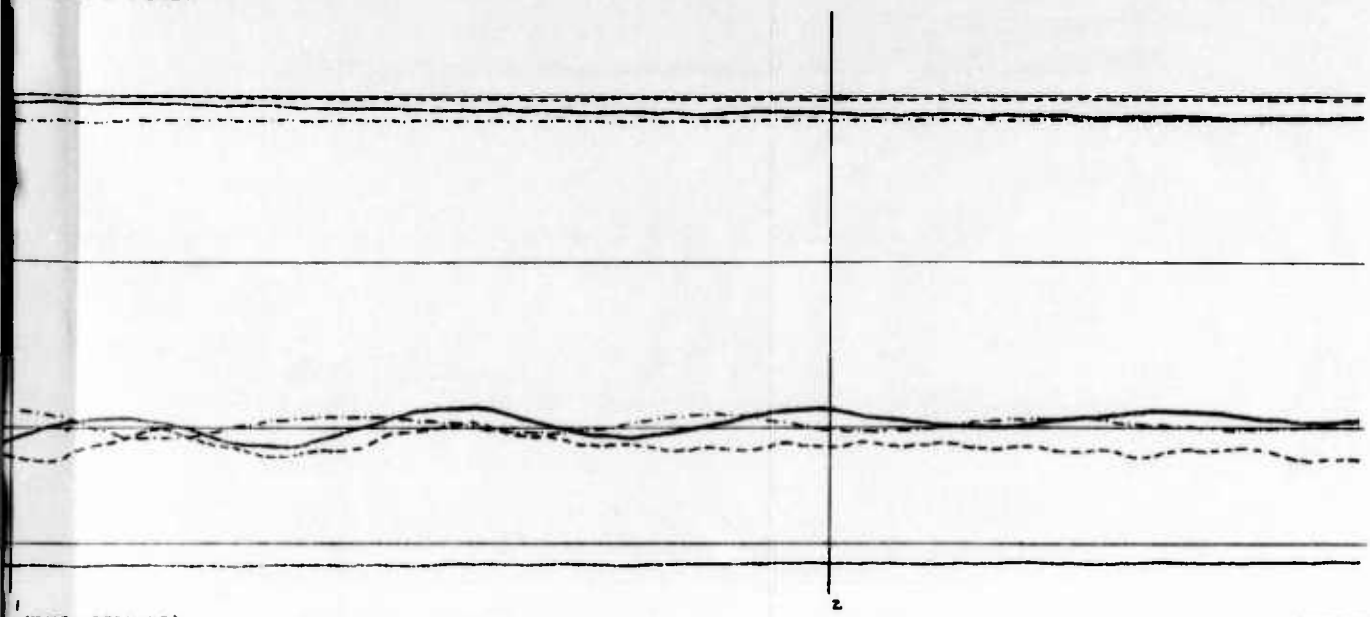


FIGURE 106. RESPONSE TO

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.0	313	85	LEVEL FLIGHT

EXTERNAL STORES.



(TIME - SECONDS)

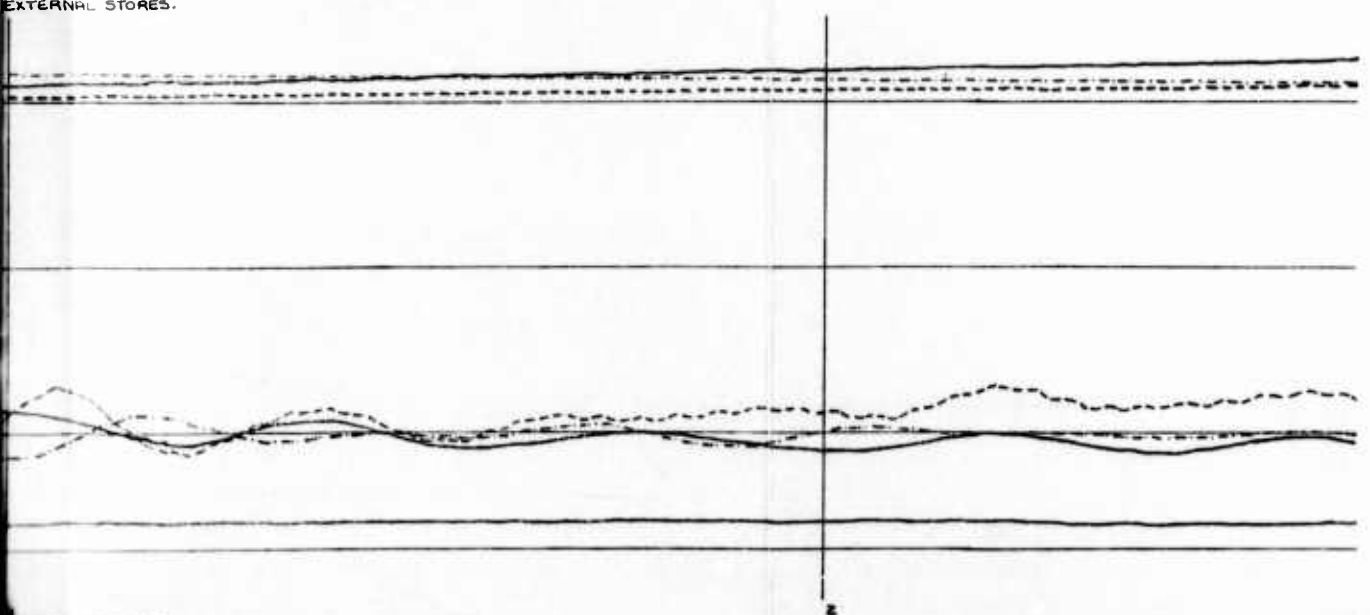
SPONSE TO A LEFT LATERAL STEP CONTROL INPUT

2

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.0	313	85	LEVEL FLIGHT

EXTERNAL STORES.



(TIME - SECONDS)

SE TO A RIGHT LATERAL STEP CONTROL INPUT

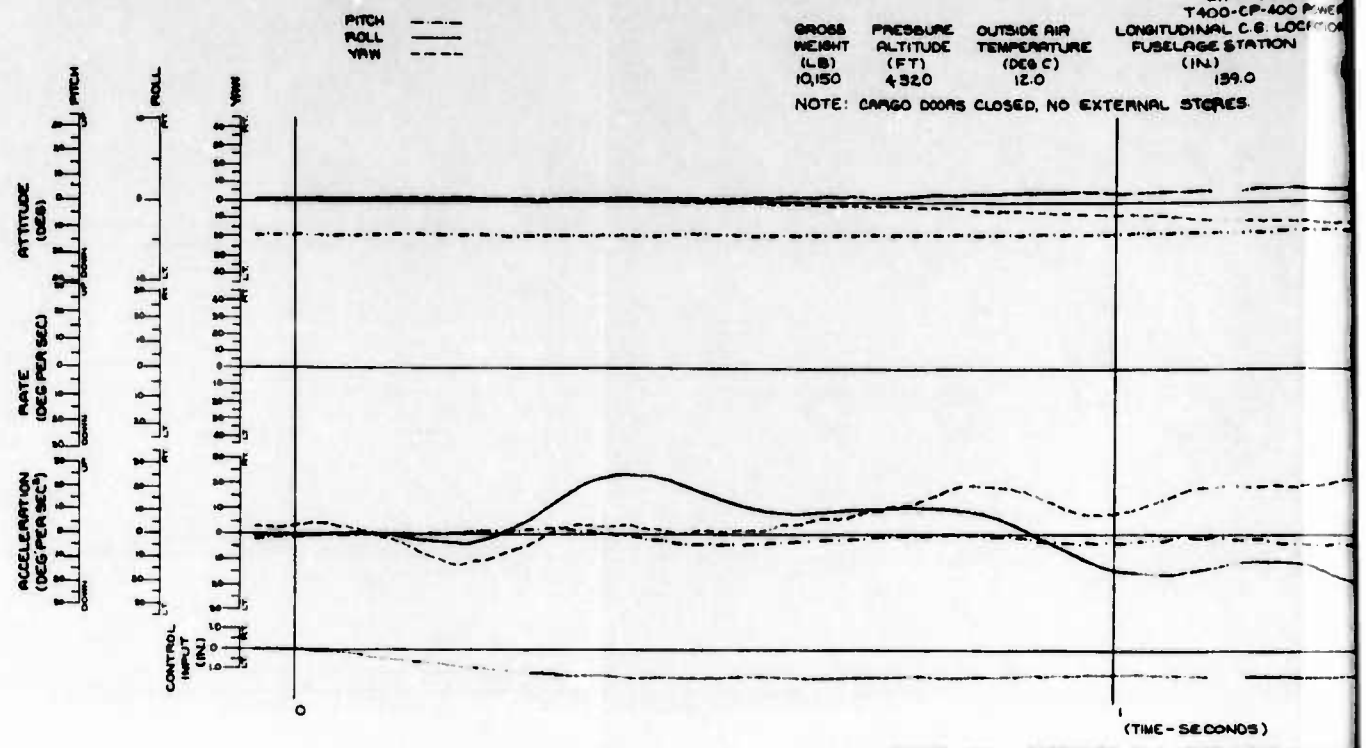


FIGURE 107. RESPONSE TO A LEFT DIRECTIONAL

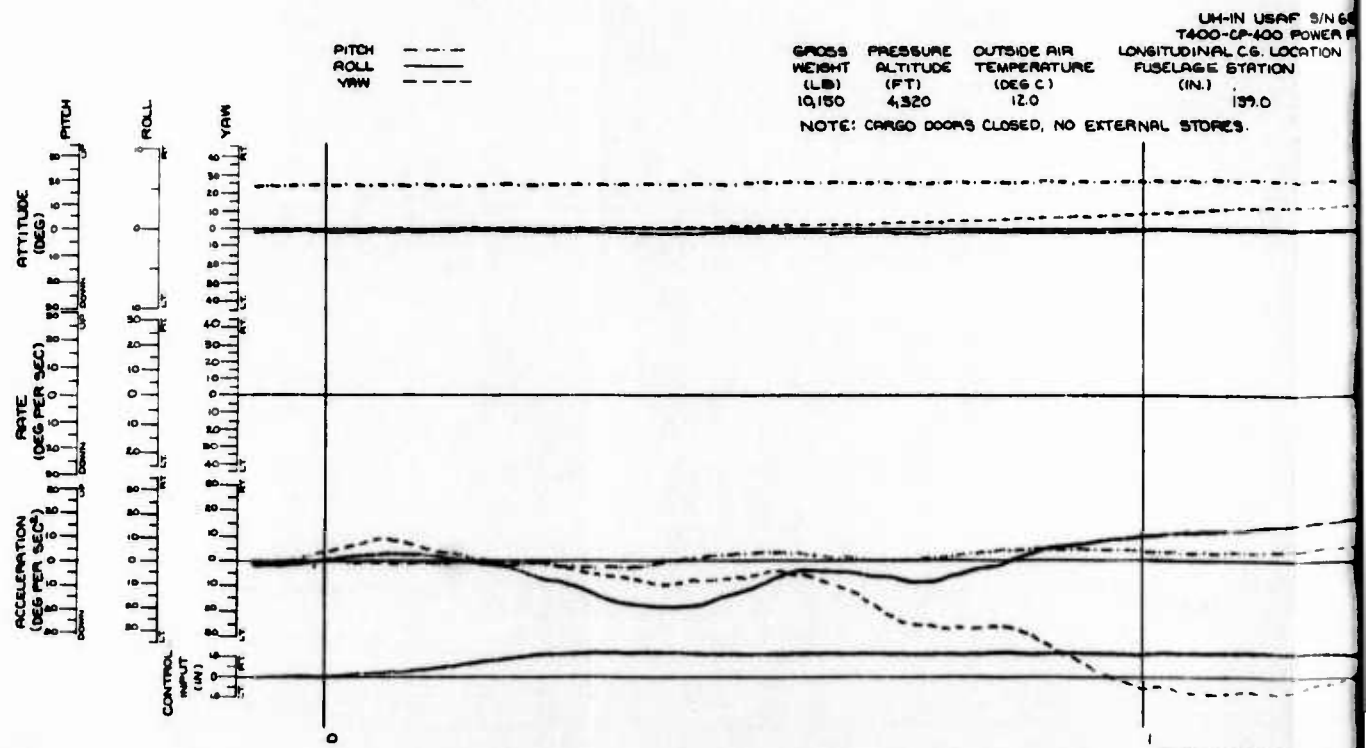
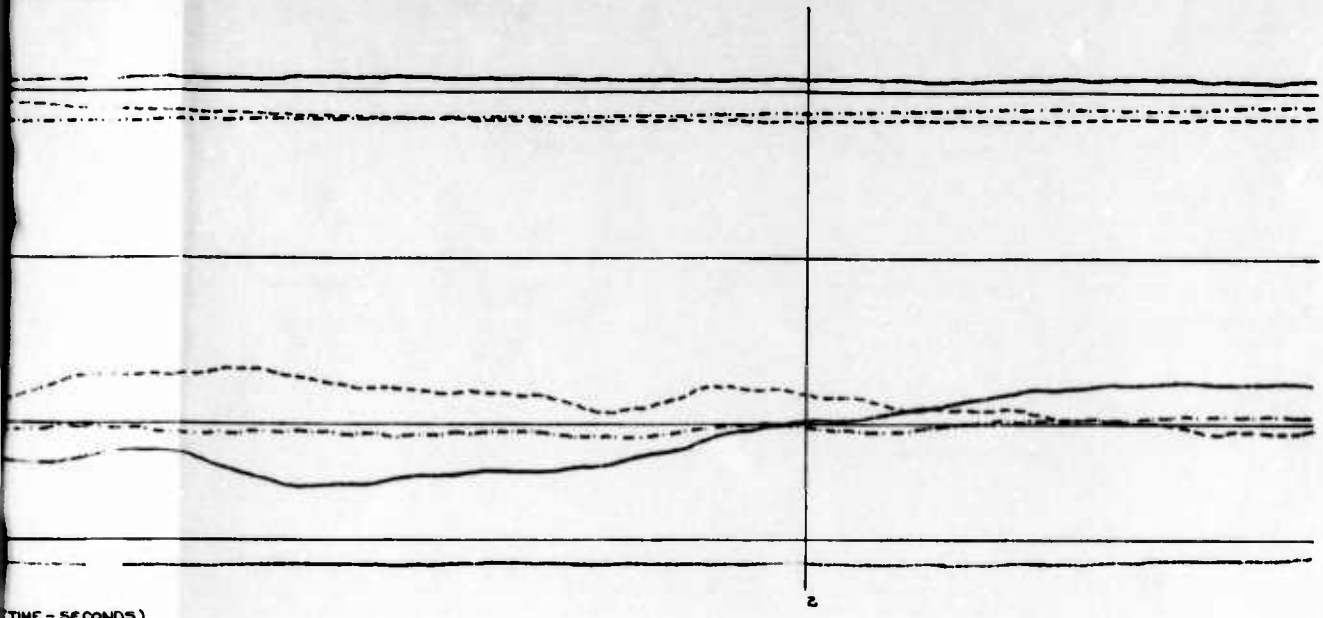


FIGURE 108. RESPONSE TO A RIGHT DIRECTIONAL

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

NGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.0	313	85	LEVEL FLIGHT

NAL STORES



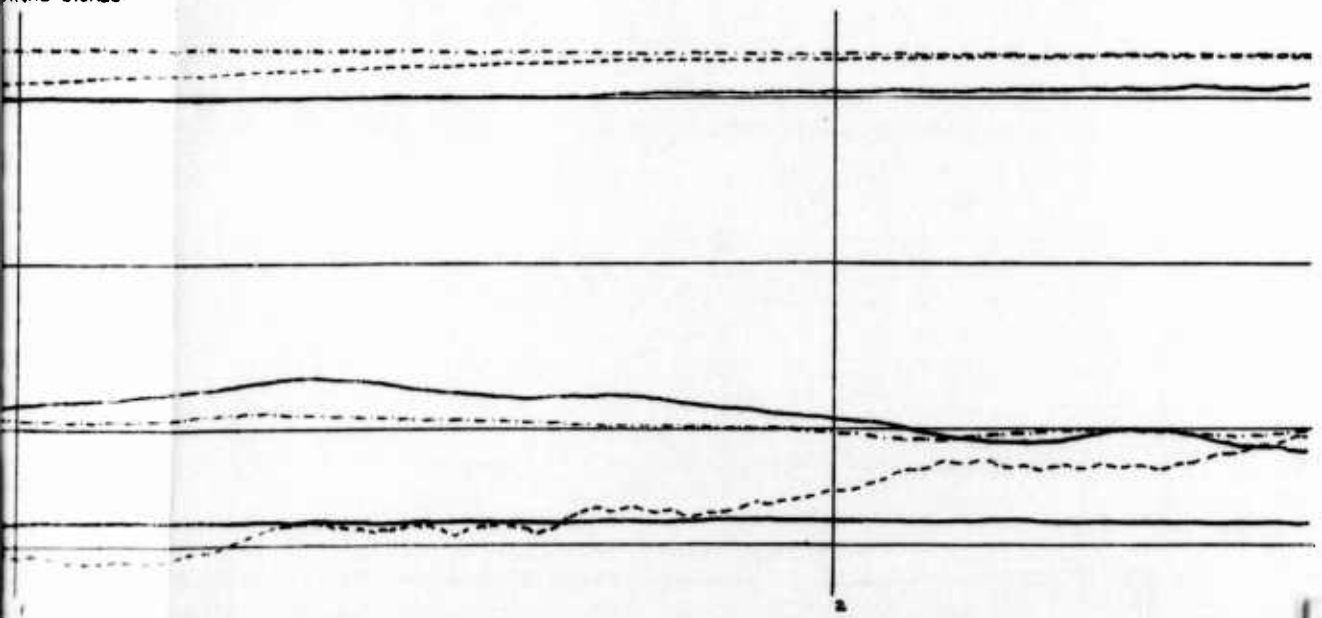
TIME - SECONDS)

TO A LEFT DIRECTIONAL STEP CONTROL INPUT

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

ONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.0	313	85	LEVEL FLIGHT

RNAL STORES.



(TIME - SECONDS)

O A RIGHT DIRECTIONAL STEP CONTROL INPUT

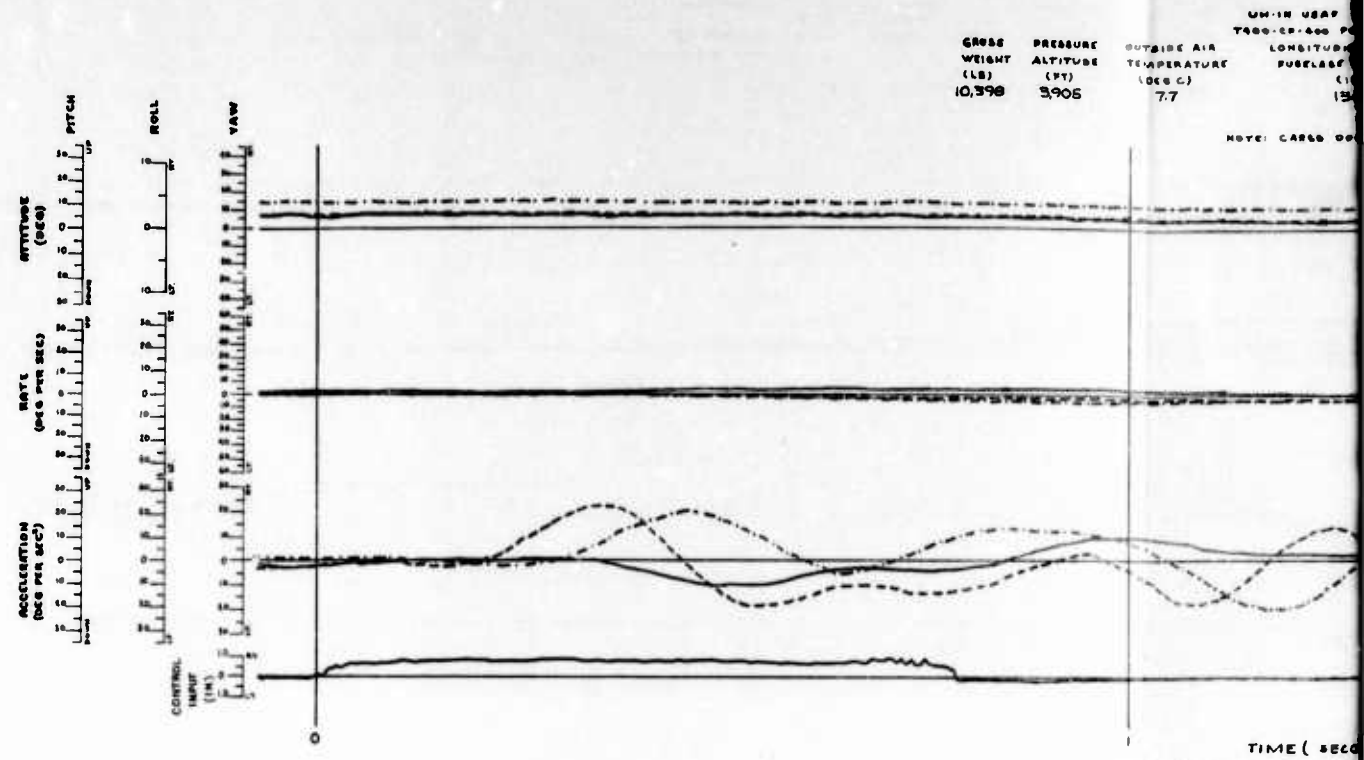
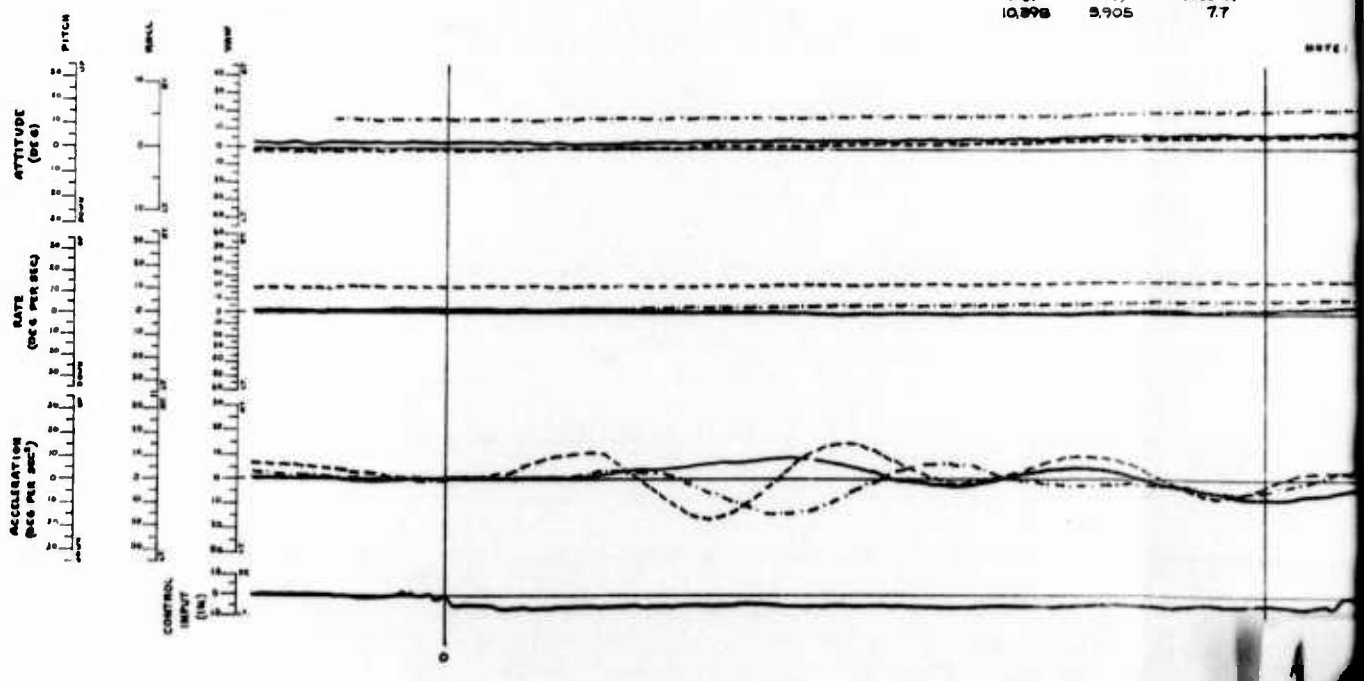


FIGURE 109 RESPONSE TO A FORE



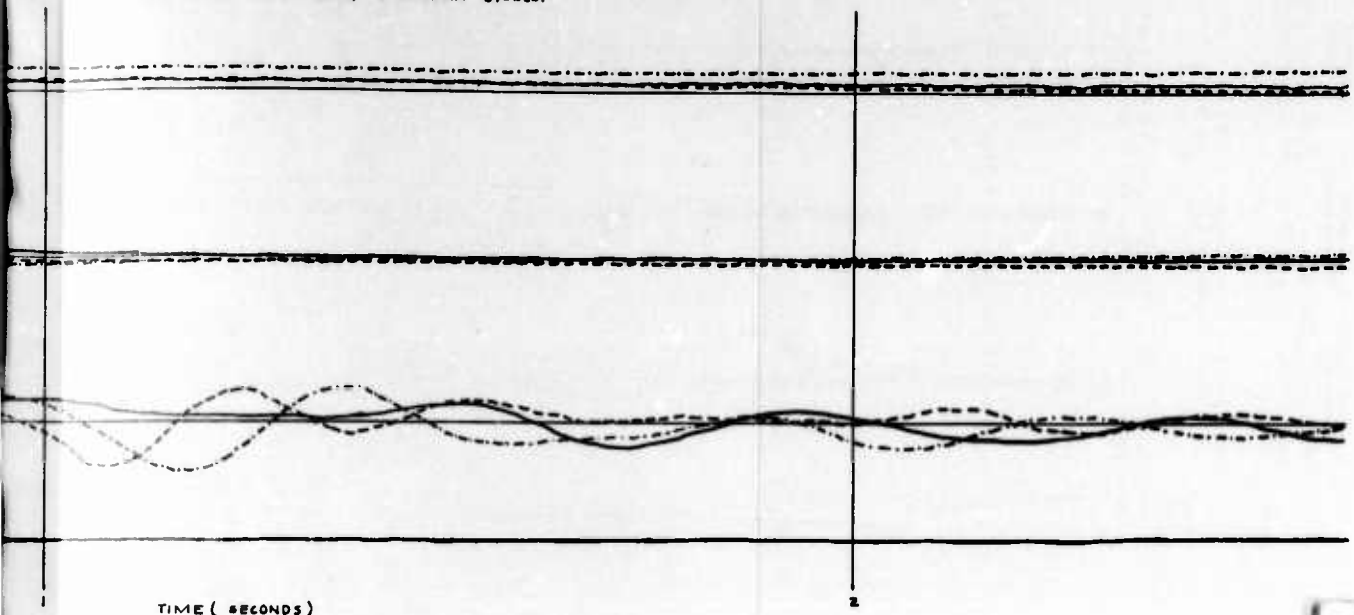
FIGURE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
77	134.0	325	0	HOVER, IGE 15 FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

FIGURE 109 RESPONSE TO A FORWARD LONGITUDINAL PULSE

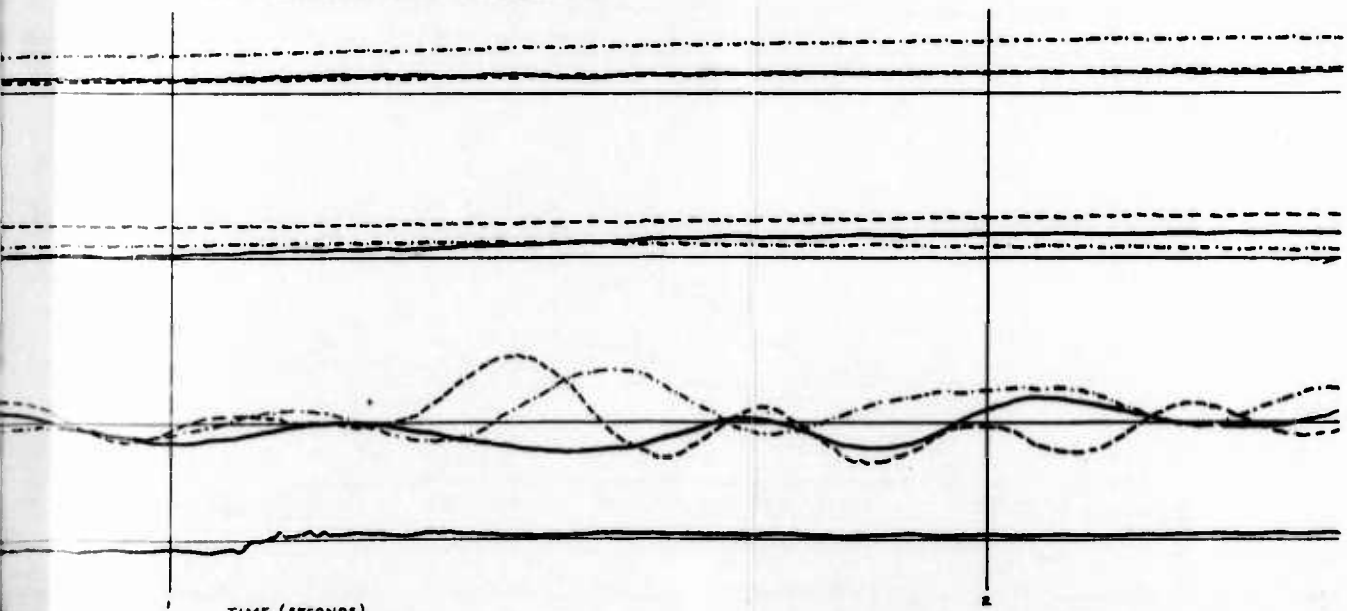
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

ESSURE LYTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
2,905	77	134.0	325	0	HOVER, IGE 15 FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

FIGURE 110 RESPONSE TO AN AFT LONGITUDINAL PULSE

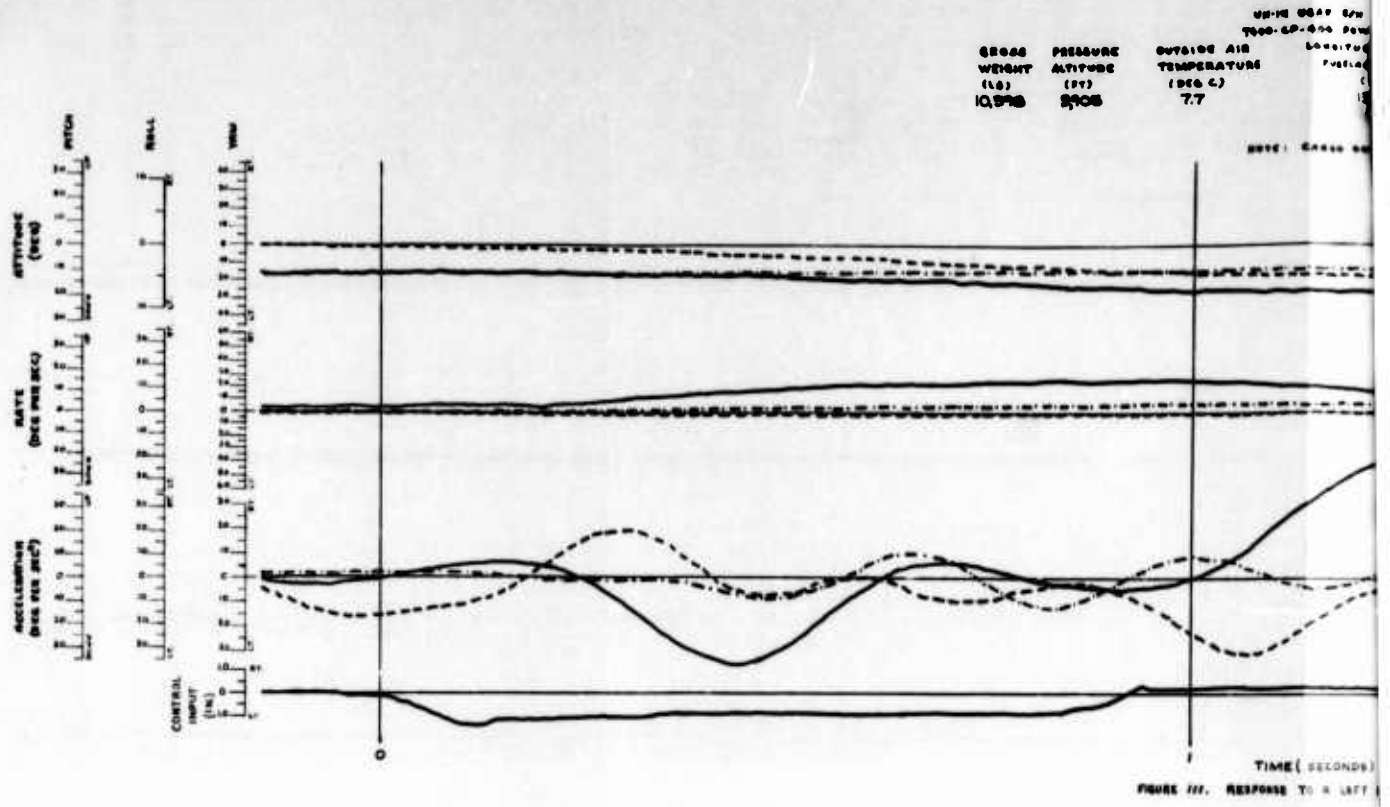


FIGURE III. RESPONSE TO A LEFT

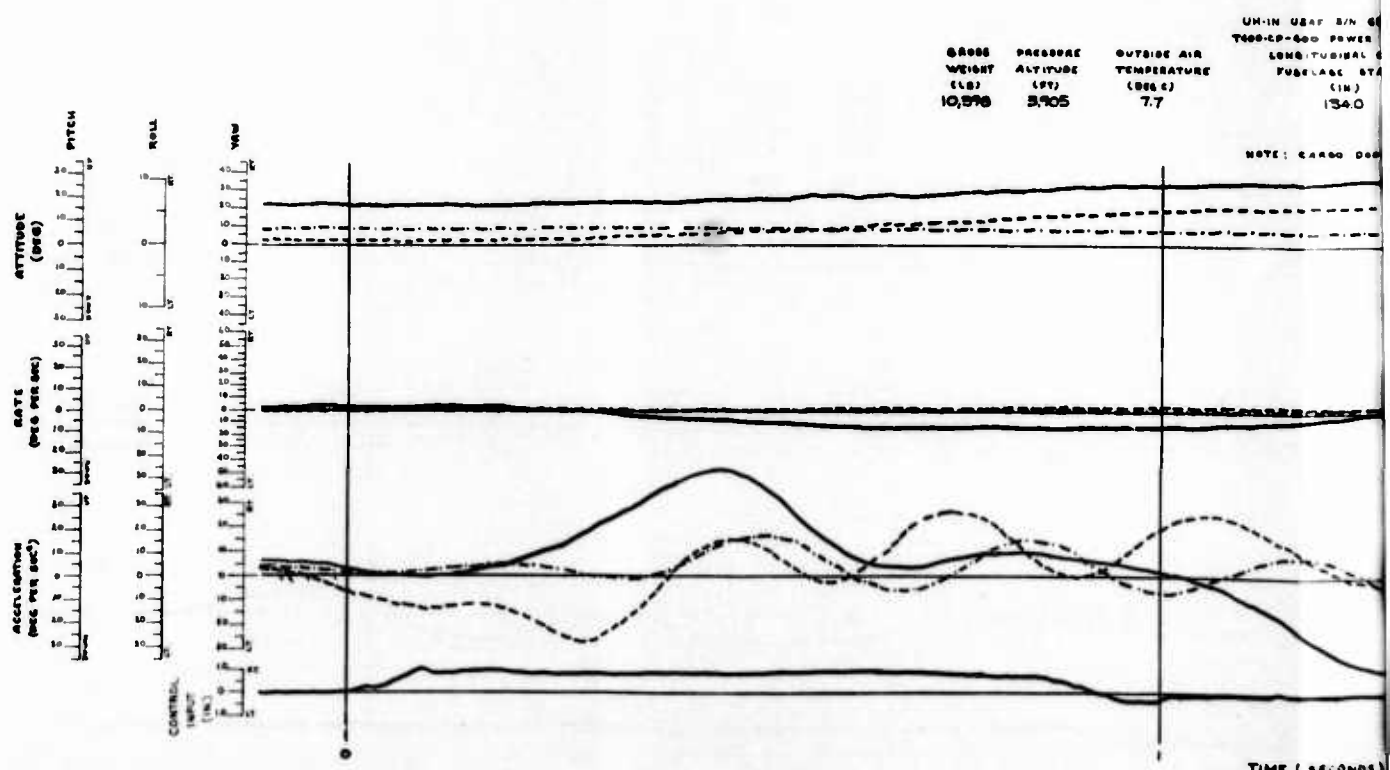


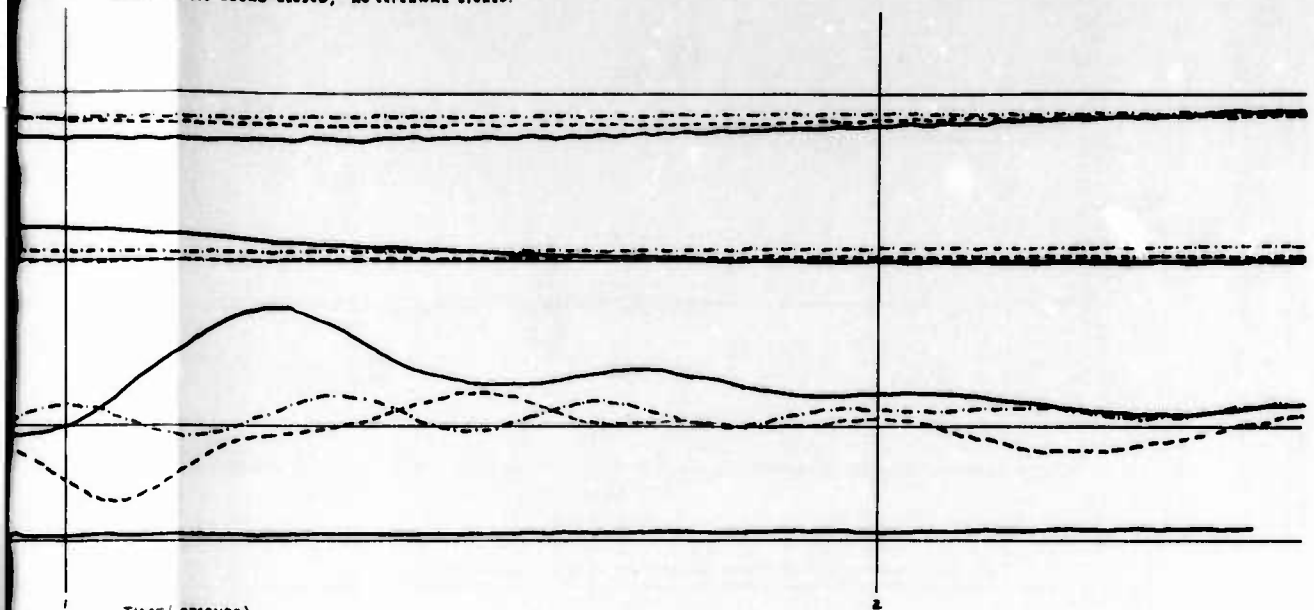
FIGURE 112. RESPO

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
7.7	134.0	325	0	HOVER, IGE 15 FT SKID HEIGHT

PITCH — · — · —
ROLL ————
YAW — — — —

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.



TIME (SECONDS)

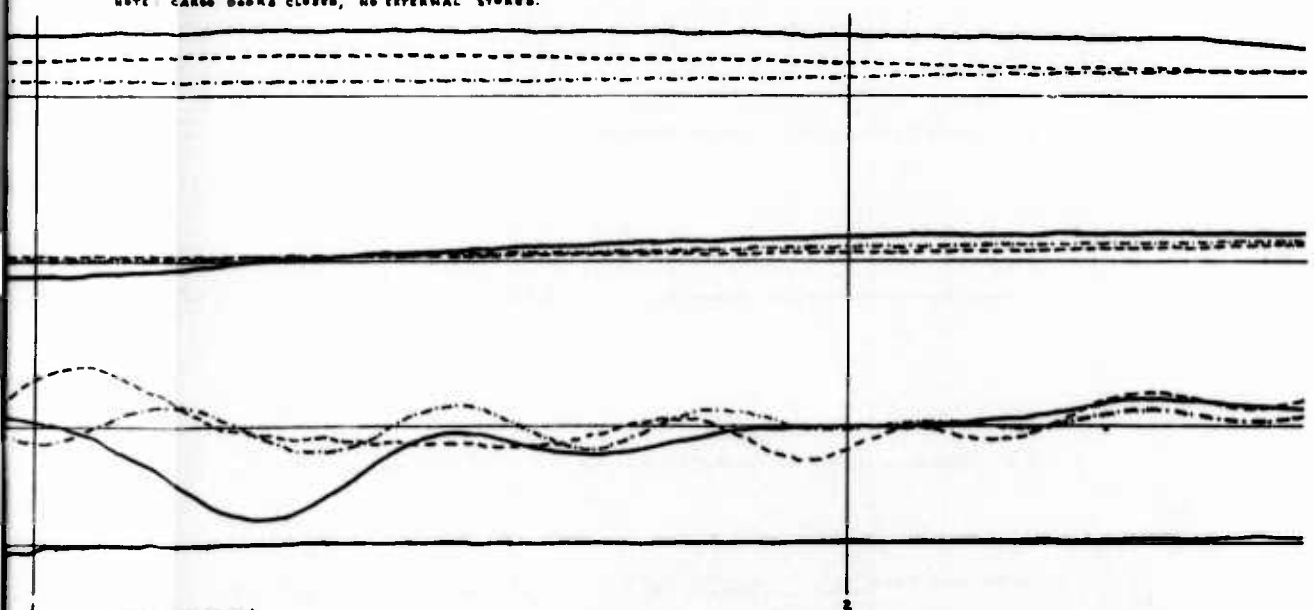
FIGURE ///. RESPONSE TO A LEFT LATERAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
7.7	134.0	325	0	HOVER, IGE 15 FT SKID HEIGHT

PITCH — · — · —
ROLL ————
YAW — — — —

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.



TIME (SECONDS)

FIGURE ///. RESPONSE TO A RIGHT LATERAL PULSE

UH-1N
T400-C
LONGIT
FUSE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,398	3,905	7.7

NOTE: GA

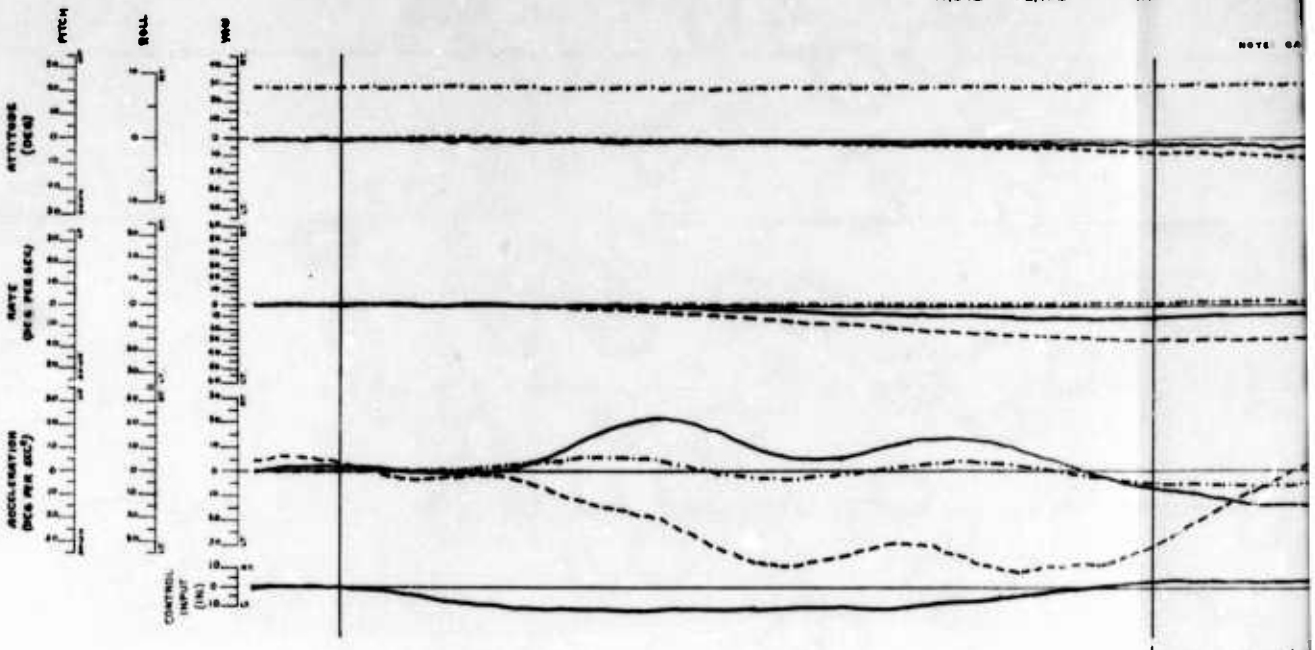


FIGURE 113. RESPONSE TO

UH-1N USAF S/
T400-CP-400
LONGITUDINA
FUSELAGE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,175	2,250	20.1

NOTE: GAR

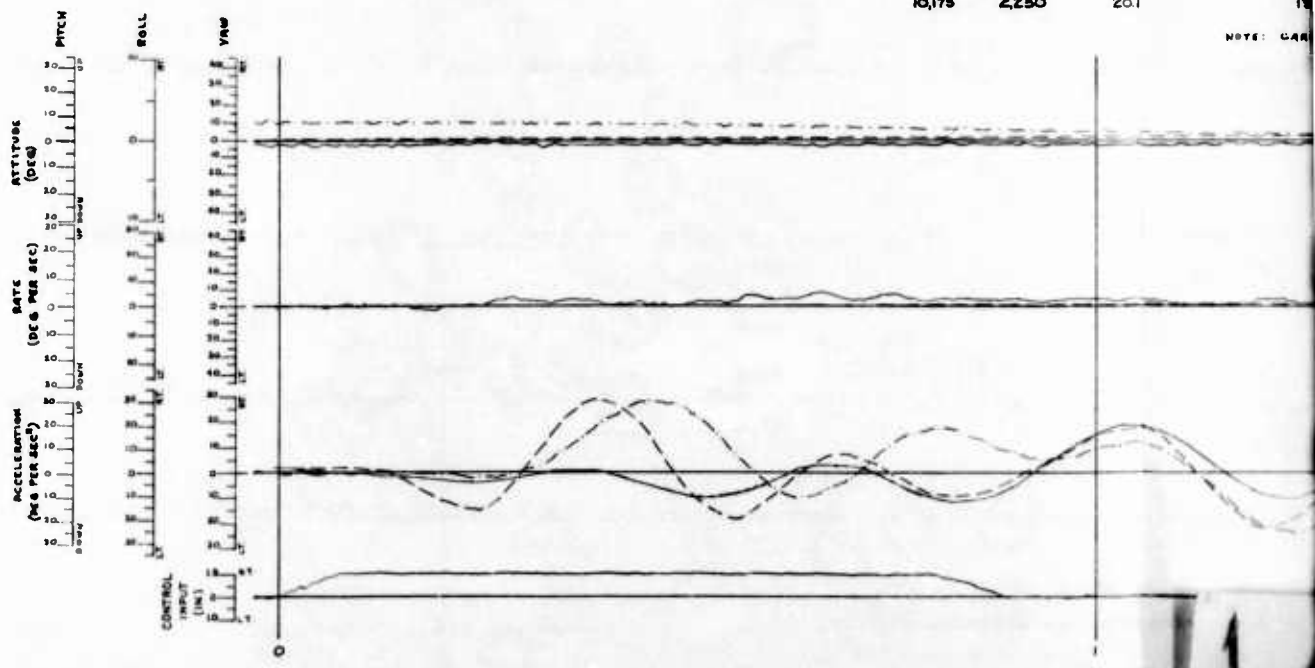


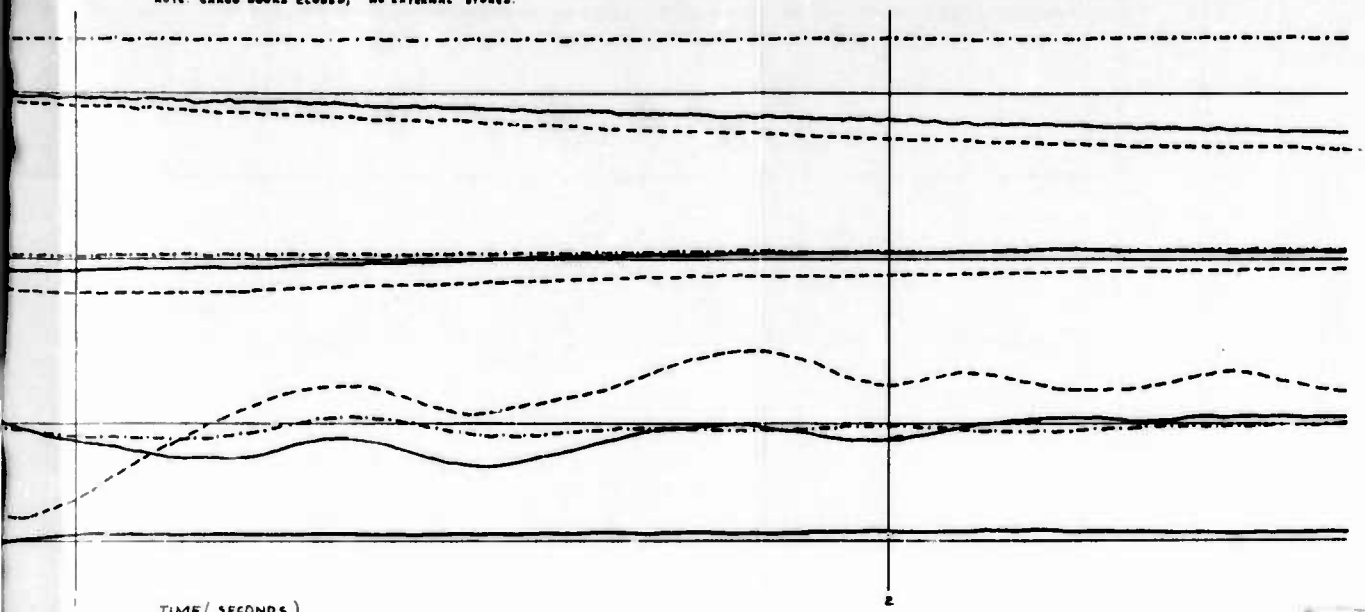
FIGURE 114

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
27	194.0	325	0	HOVER, IGE. 15 FT SKID HEIGHT

PITCH — · — · —
ROLL ————
YAW — — — —

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.



TIME (SECONDS)

FIGURE 113 RESPONSE TO A LEFT DIRECTIONAL PULSE

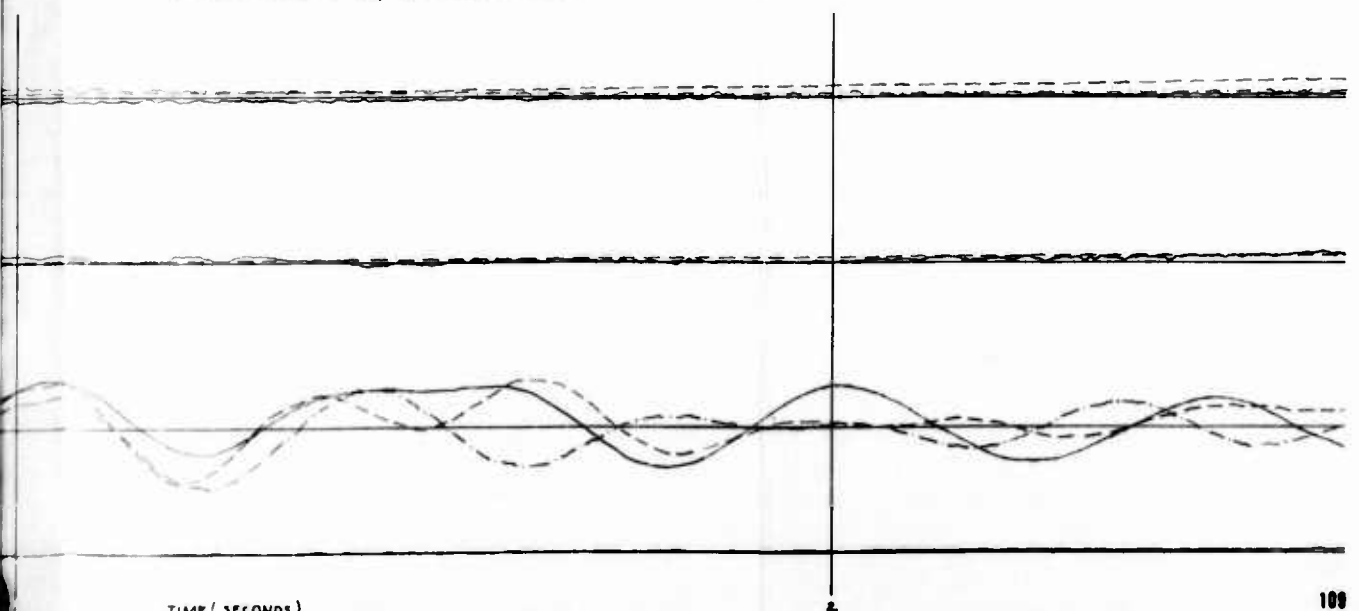
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
20.1	194	322	0	HOVER, IGE. 15 FT SKID HEIGHT

PITCH — · — · —
ROLL ————
YAW — — — —

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.



TIME (SECONDS)

FIGURE 114 RESPONSE TO A FORWARD LONGITUDINAL PULSE

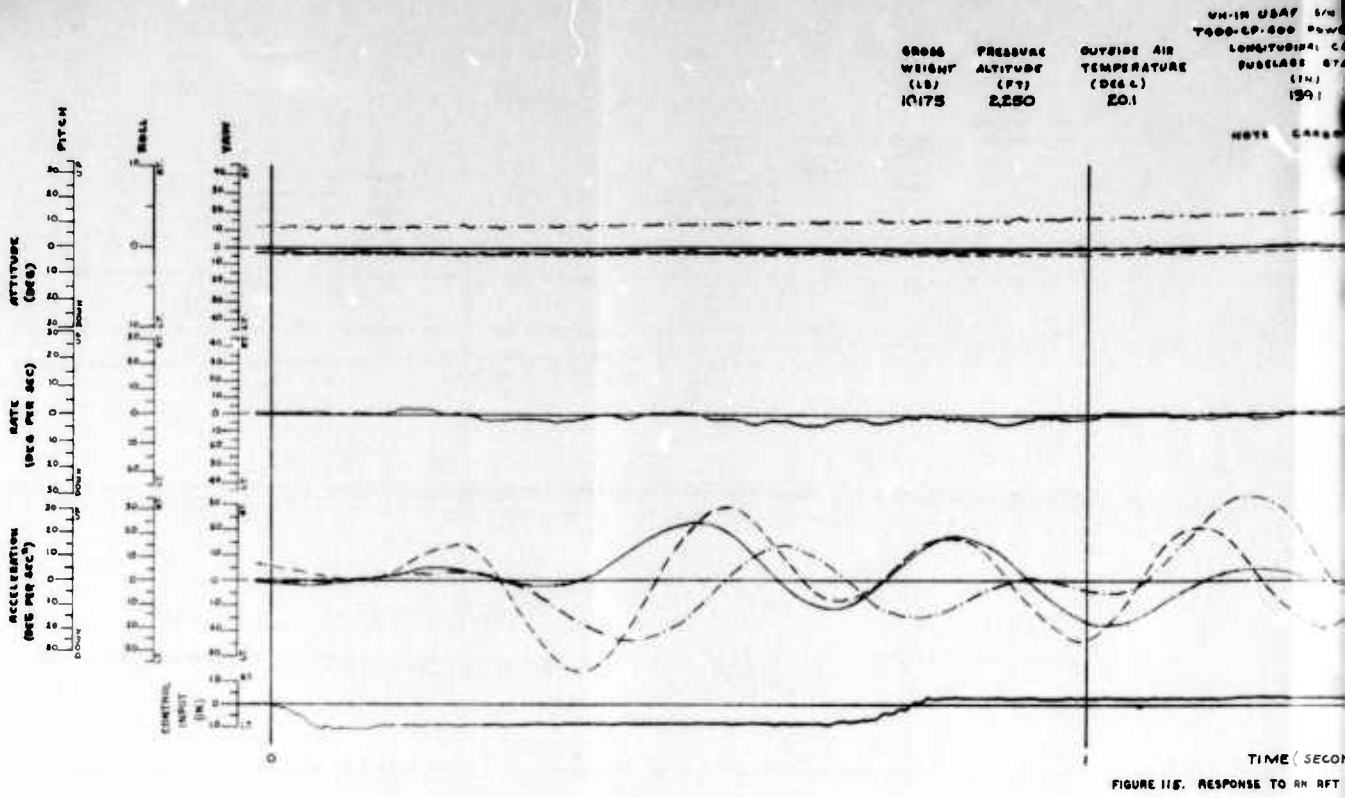


FIGURE 115. RESPONSE TO AN AFT

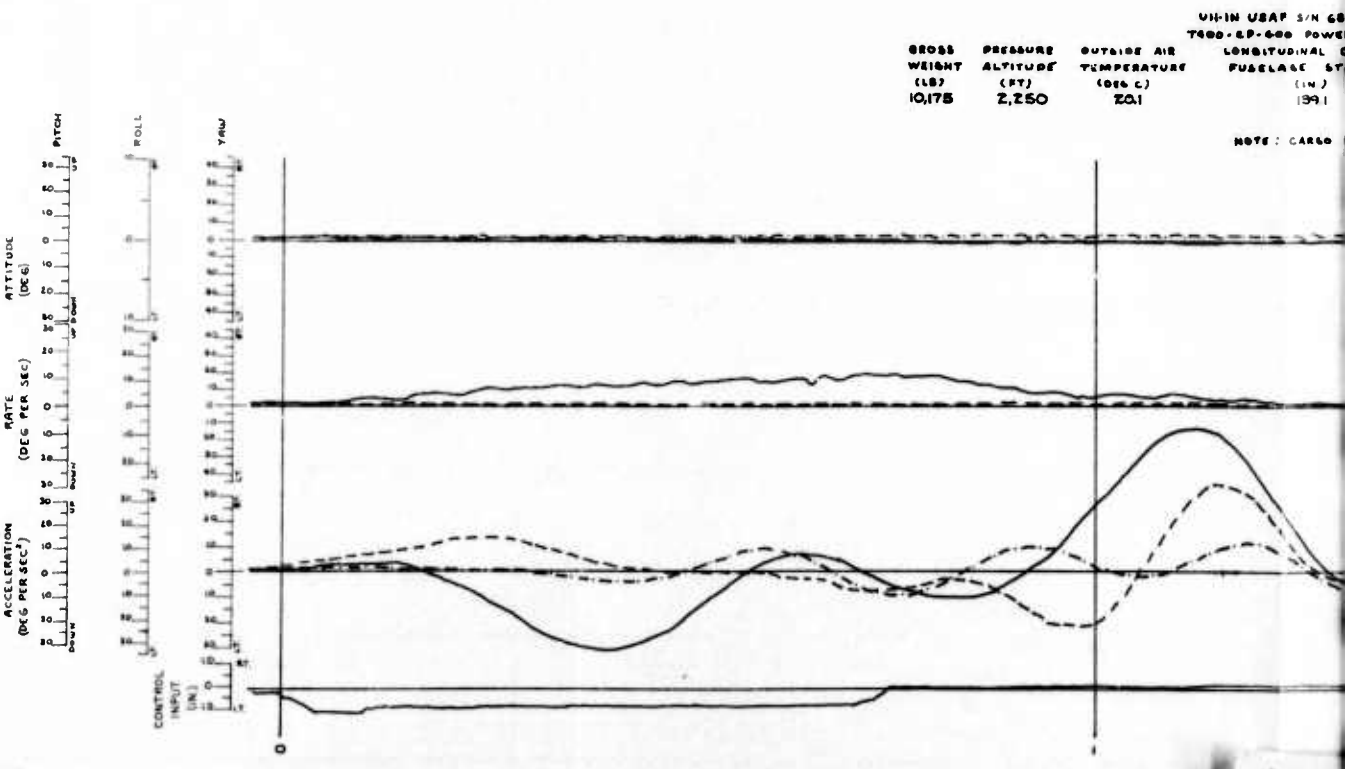


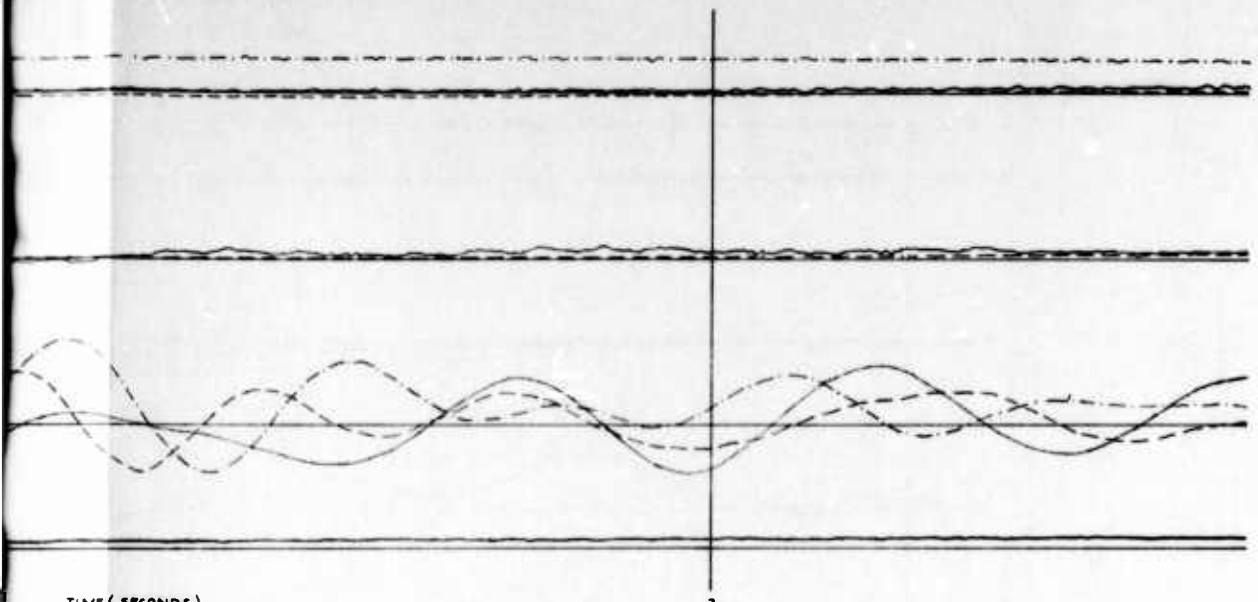
FIGURE 116

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.1	322	0	HOVER, IGE 15 FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

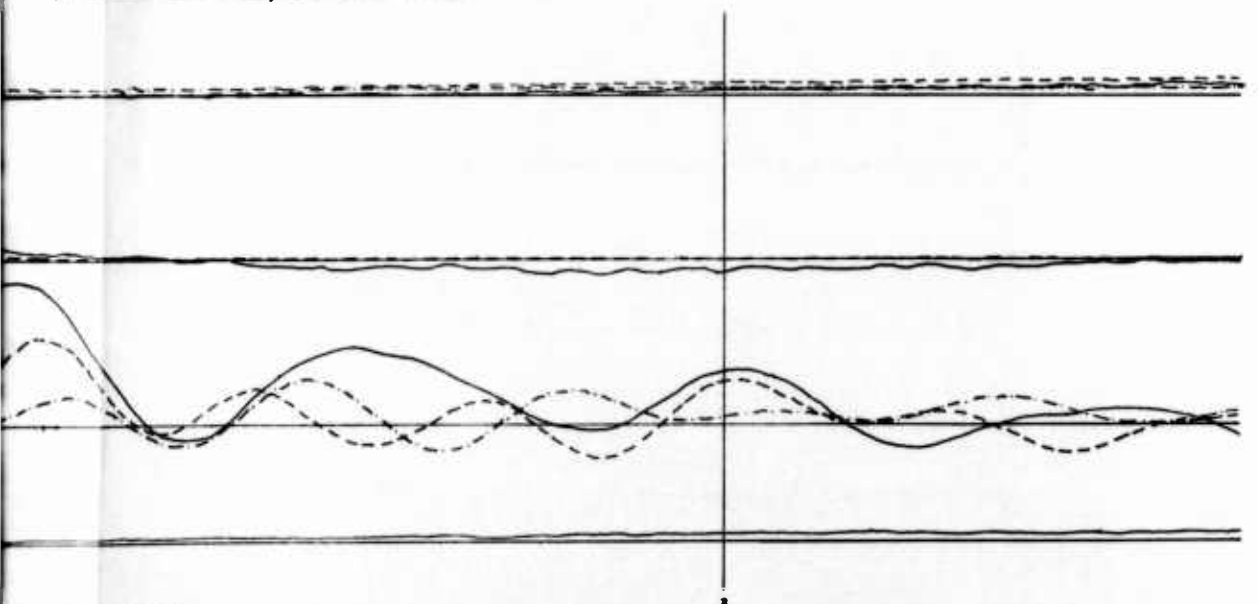
RESPONSE TO RH AFT LONGITUDINAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.1	322	0	HOVER, IGE 15 FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

RESPONSE TO A LEFT LATERAL PULSE

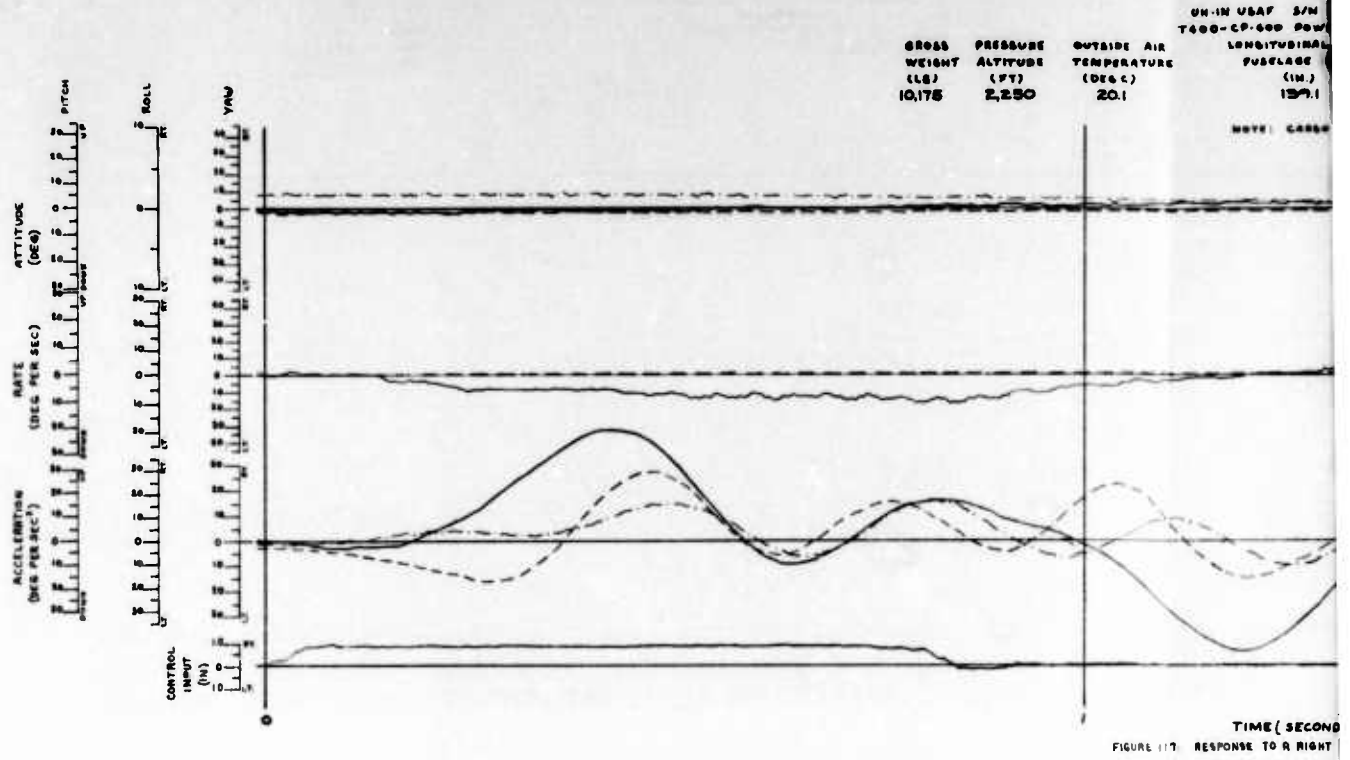


FIGURE 117 RESPONSE TO R RIGHT

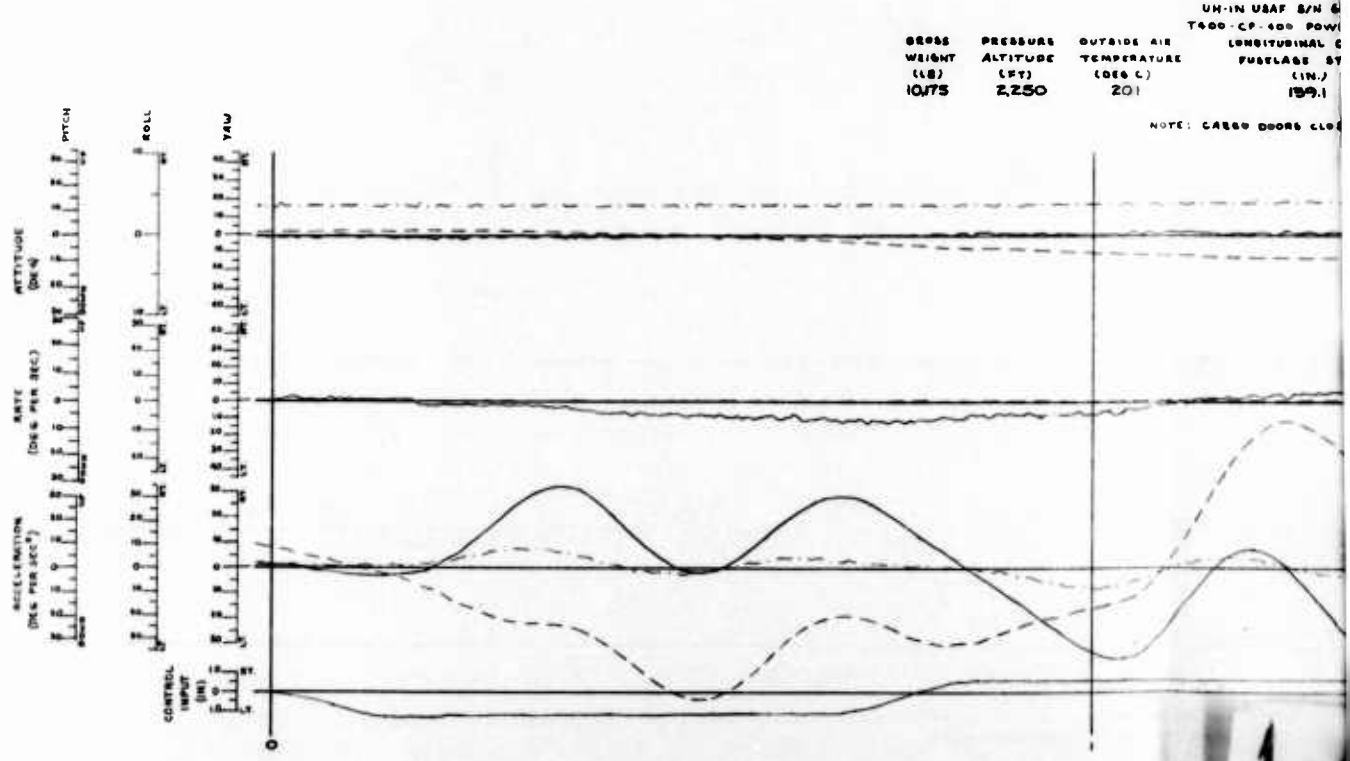


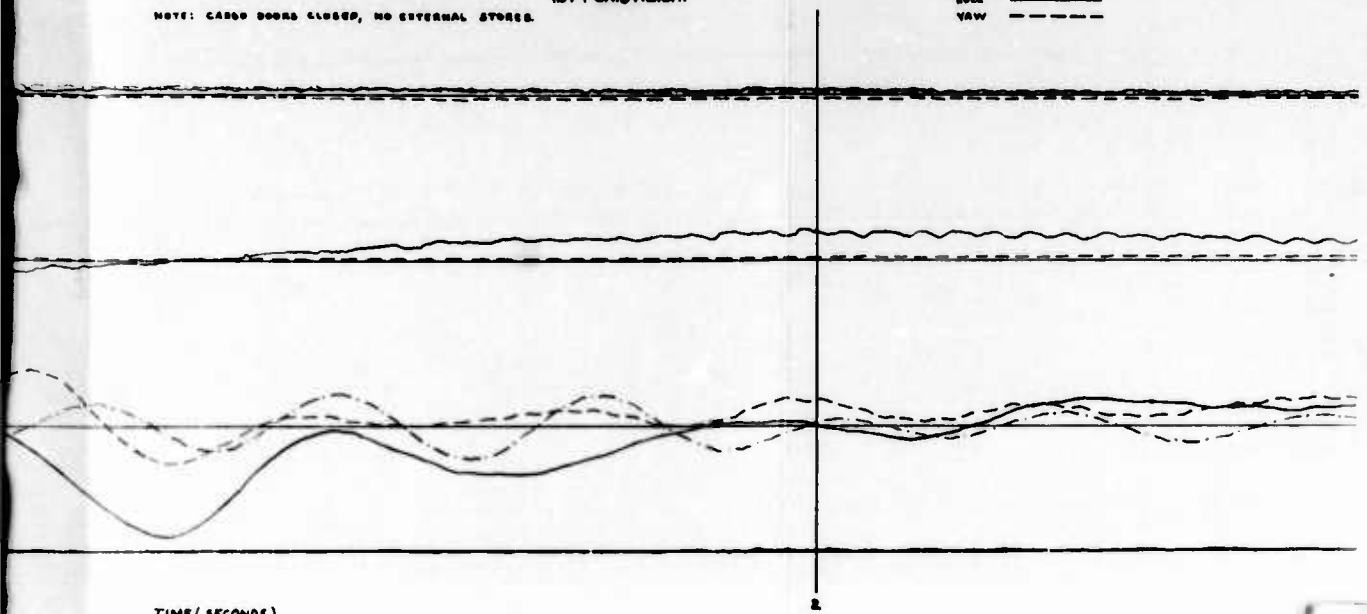
FIGURE 118

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
20.1	139.1	322	0	HOVER, IGE IS FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



TIME (SECONDS)

FIGURE 117 RESPONSE TO A RIGHT LATERAL PULSE

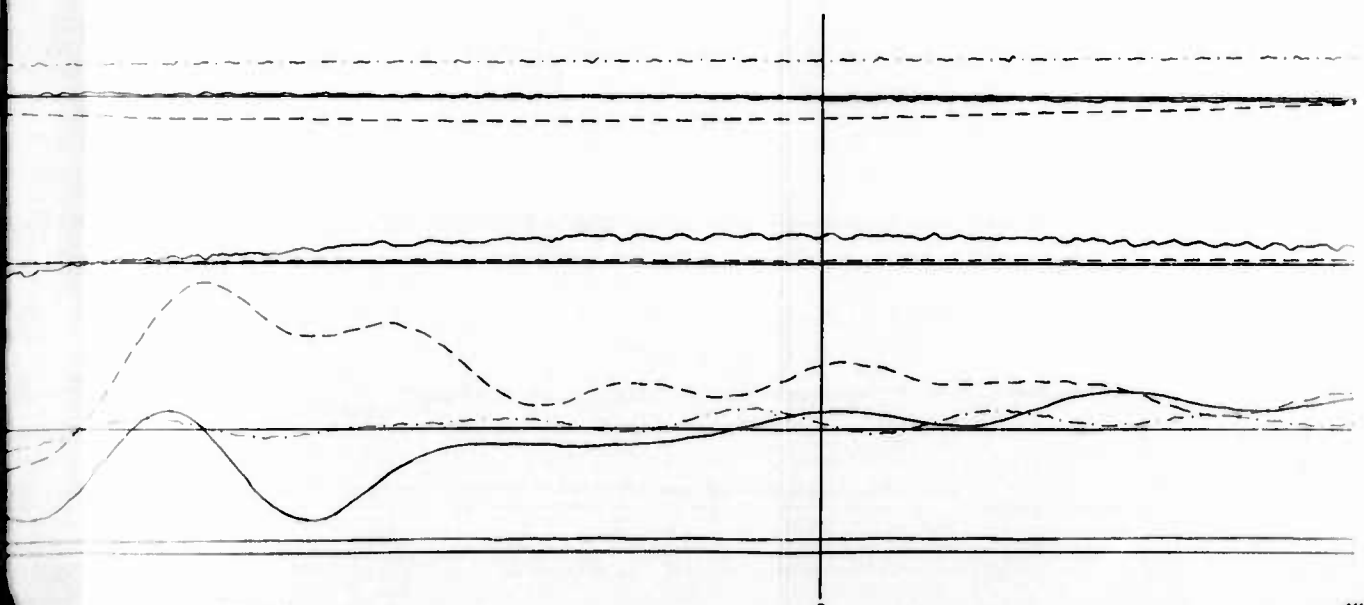
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
20.1	139.1	322	0	HOVER, IGE IS FT SKID HEIGHT

NOTE CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



TIME (SECONDS)

FIGURE 118 RESPONSE TO A LEFT DIRECTIONAL PULSE

UH-1N USAF S/N
T400-CP-400 Pow

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL FUSELAGE (IN)
10,175	2,250	20.1	139

NOTE: CARGO

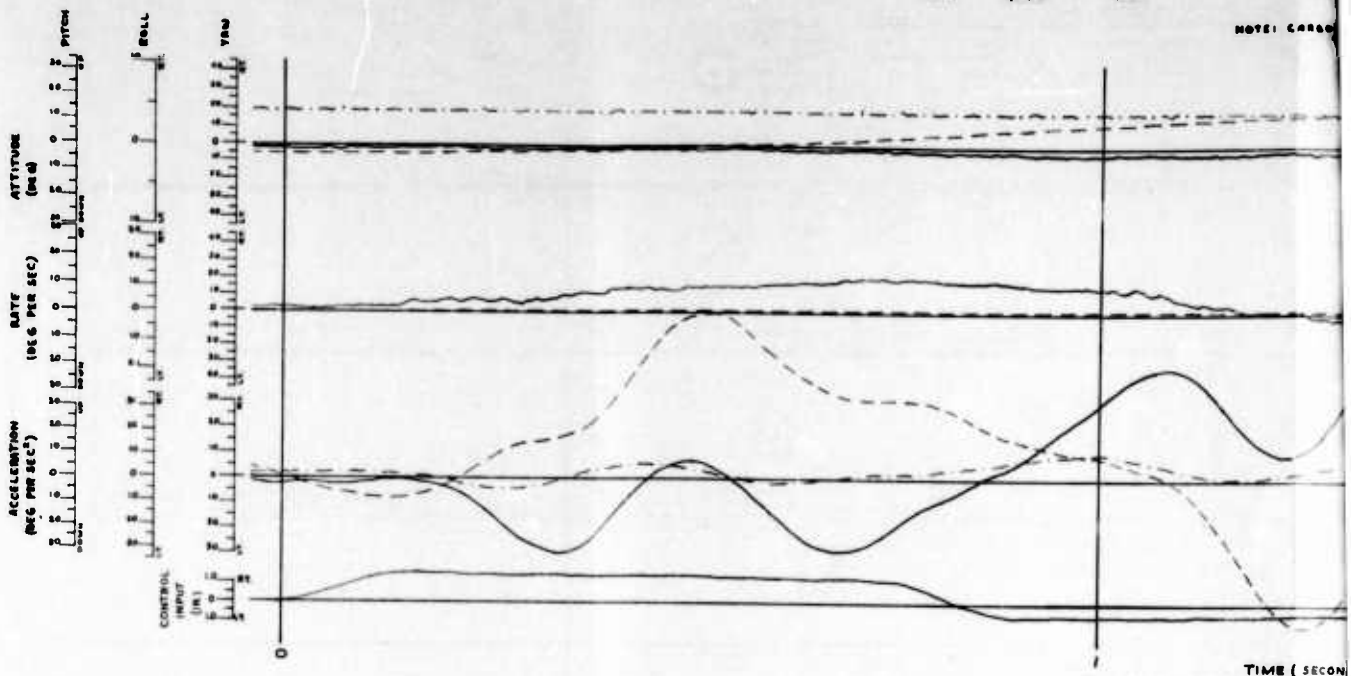


FIGURE 119. RESPONSE TO A RIGHT

UH-1N USAF
T400-CP-400

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL FUSELAGE (IN)
10,398	3,960	9.7	134

NOTE: CARGO D

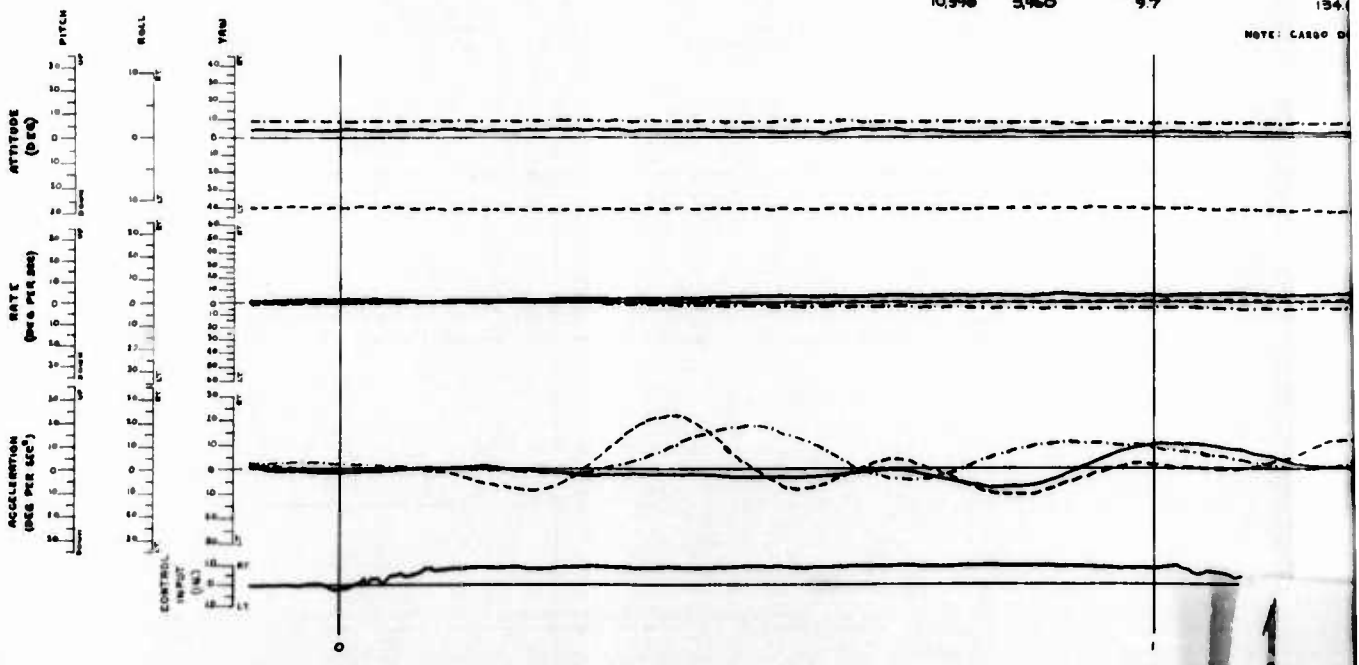


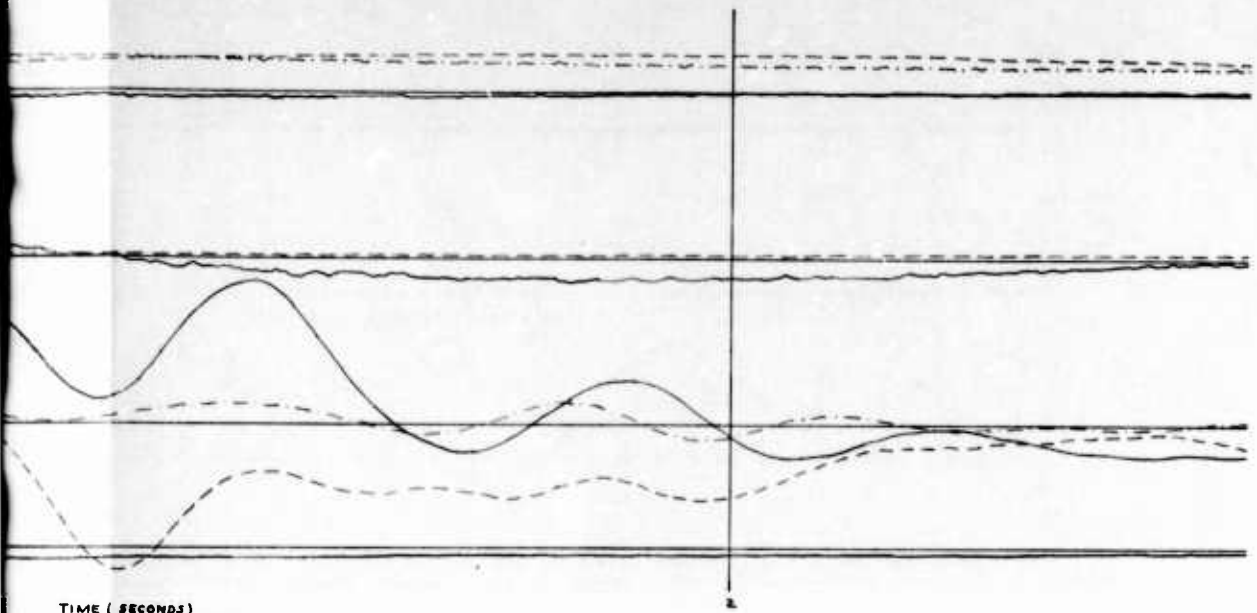
FIGURE 120.

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
189.1	322	0	HOVER, IGE 15 FT SKID HEIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



TIME (SECONDS)

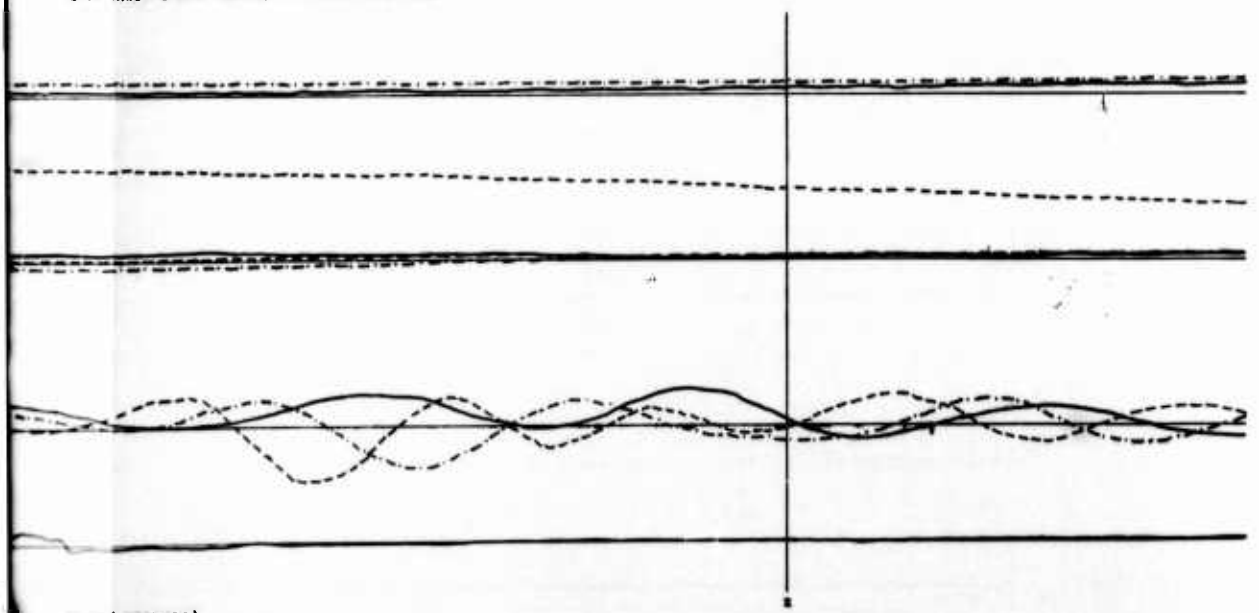
9. RESPONSE TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
194.0	325	0	HOVER, OGE

NOTE CARGO DOORS CLOSED, NO EXTERNAL STORES

PITCH
ROLL
YAW



TIME (SECONDS)

RESPONSE TO A FORWARD LONGITUDINAL PULSE

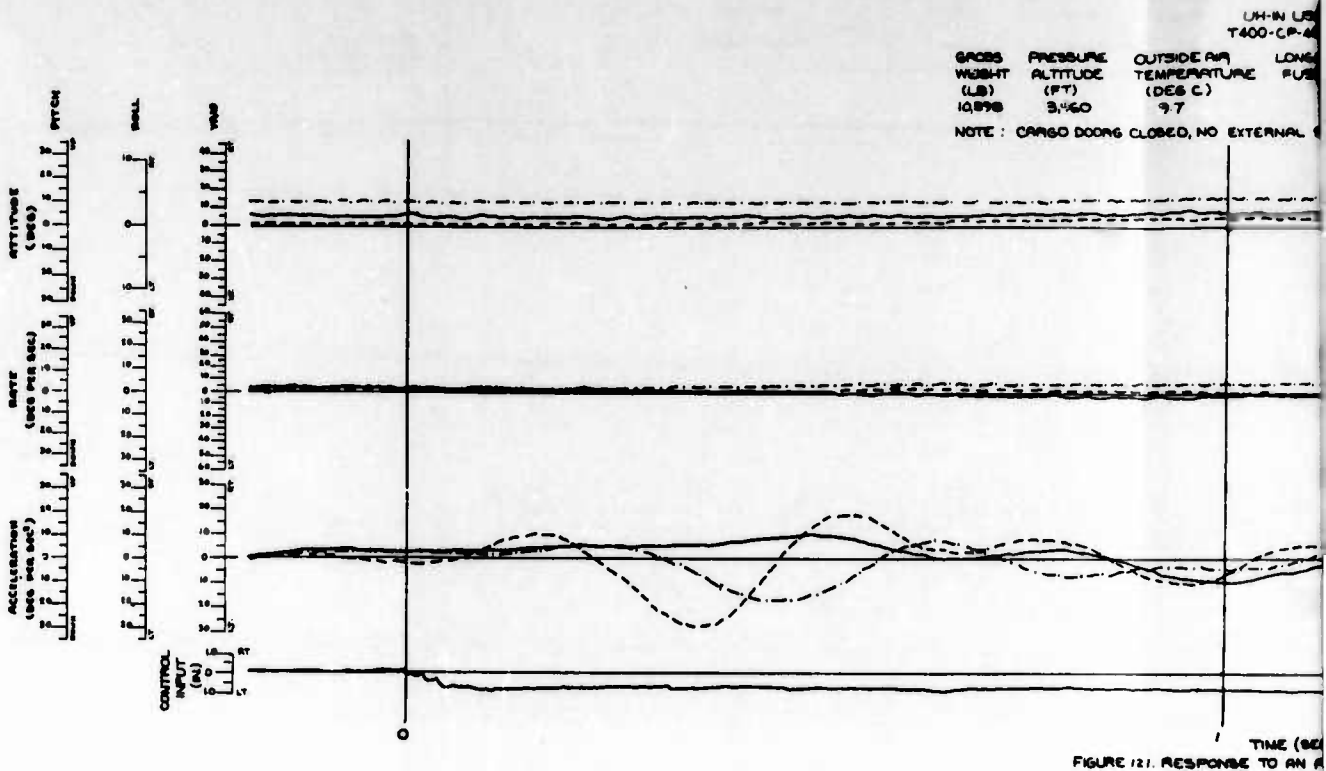


FIGURE 121. RESPONSE TO AN

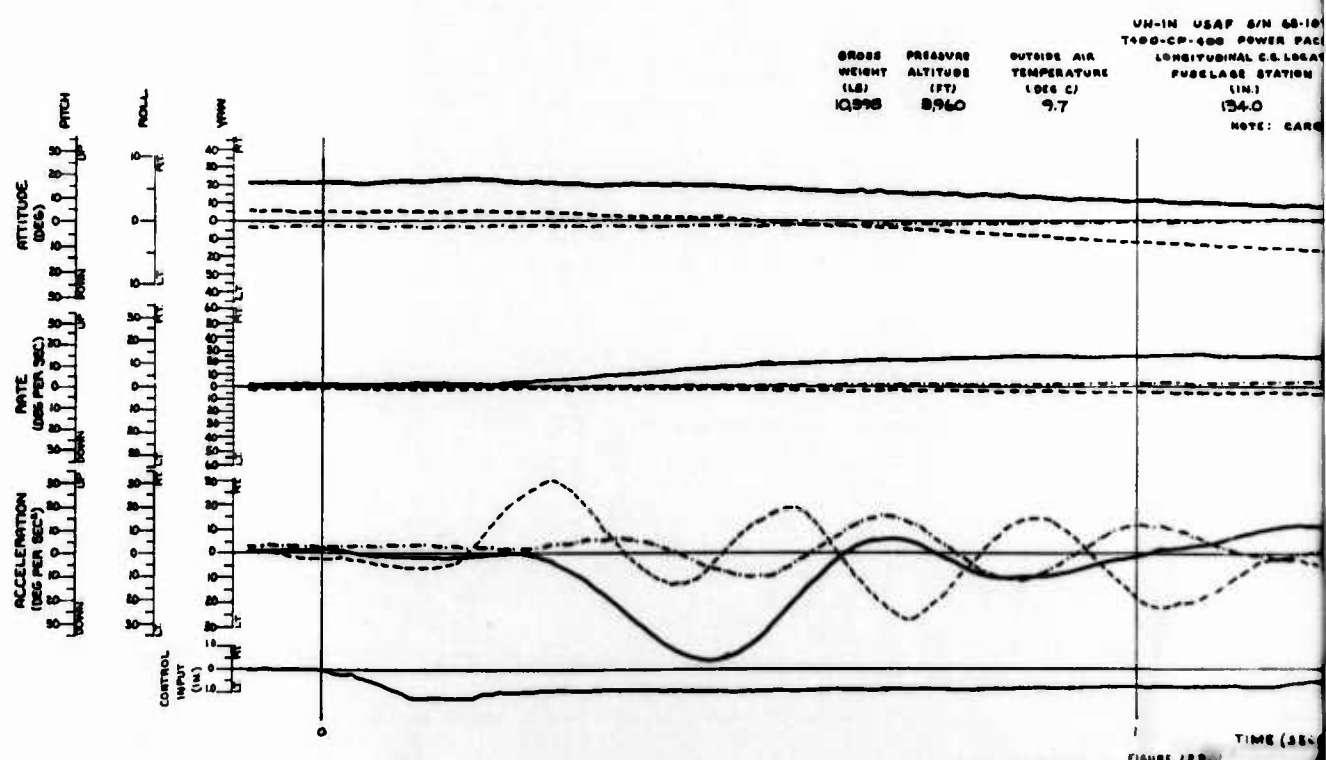


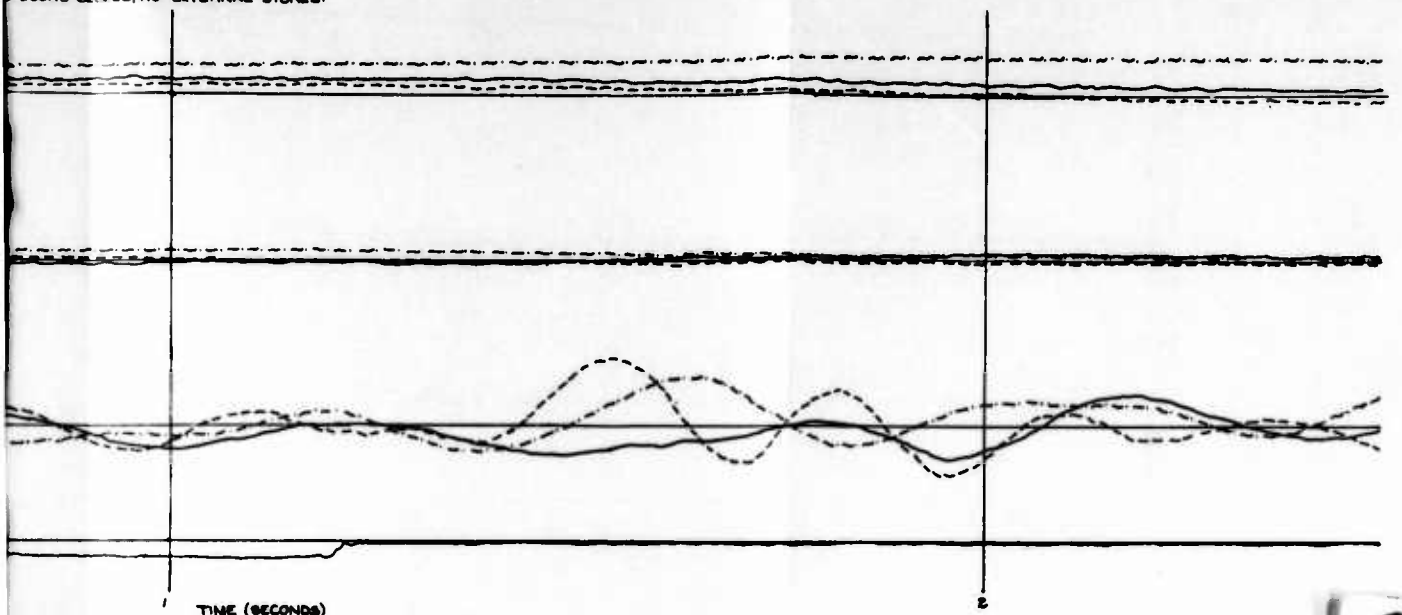
FIGURE 122.

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

...URE ...TUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
...60	9.7	134.0	323	0	HOVER, OGE

PITCH — · — · —
ROLL ————
YAW — — — —

) DOORS CLOSED, NO EXTERNAL STORES.



TIME (SECONDS)

FIGURE 121. RESPONSE TO AN AFT LONGITUDINAL PULSE

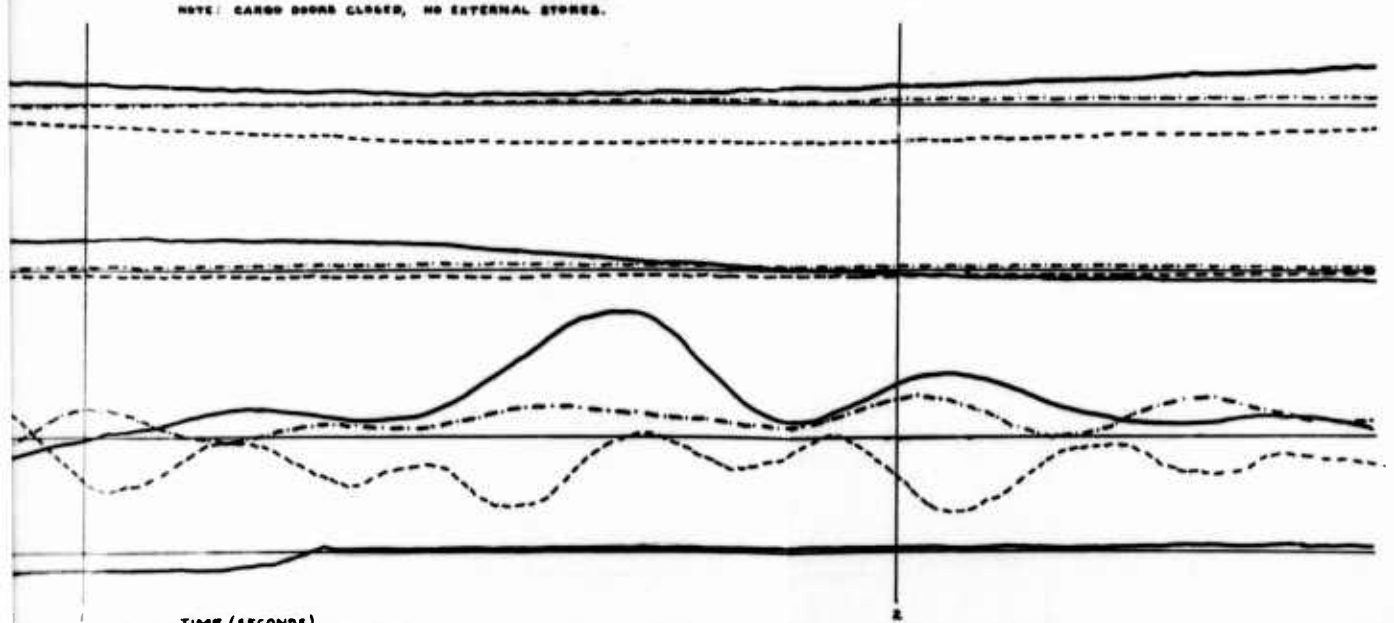
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR ...ATURE C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
...F	134.0	323	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

FIGURE 122 RESPONSE TO A LEFT LATERAL PULSE

UH-1N USAF S/N
T400-CP-400 POWER
LONGITUDINAL C.G. LO
FUSELAGE STATIO
(IN.)
134.0
NOTE: CARGO DOOR

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,398	3,960	9.7

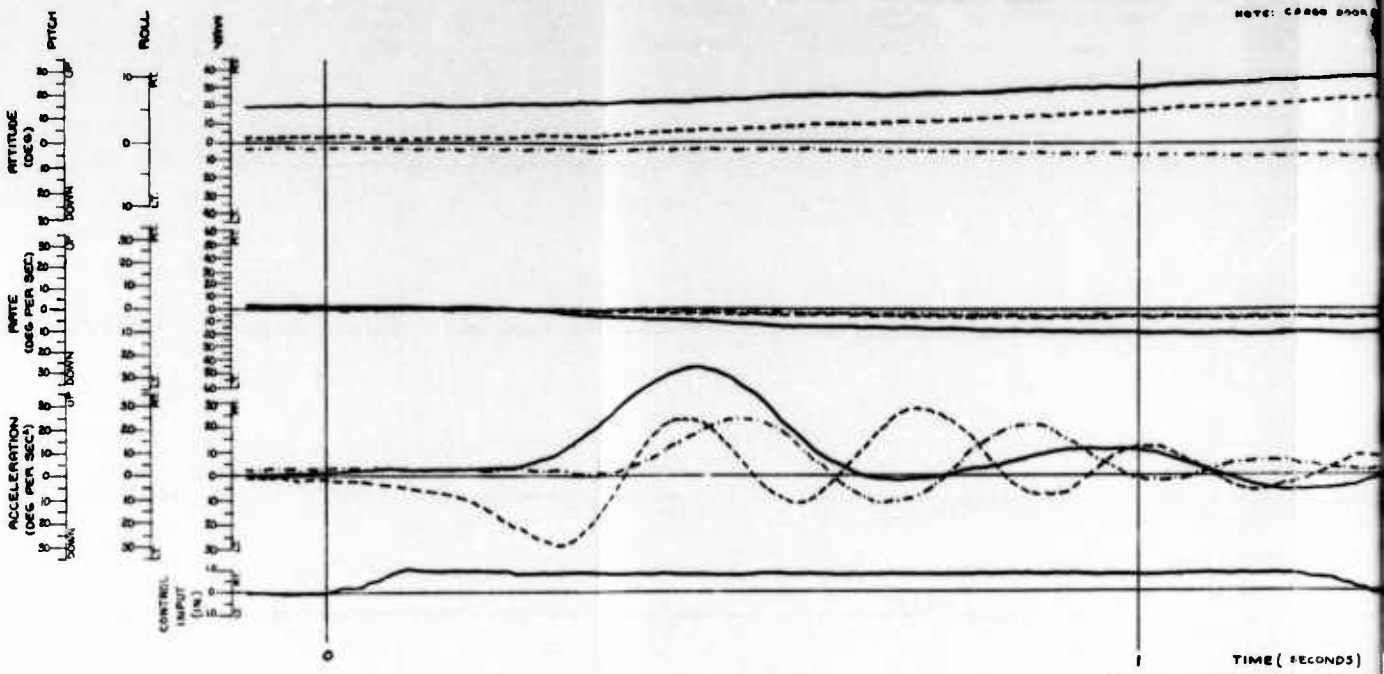


FIGURE 123. RESPONSE TO A RIGHT LA

UH-1N USAF S/N 66-1
T400-CP-400 POWER
LONGITUDINAL C.G.
FUSELAGE STATI
(IN.)
134.0
NOTE: CARGO DOORS CLOSE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,398	3,960	9.7

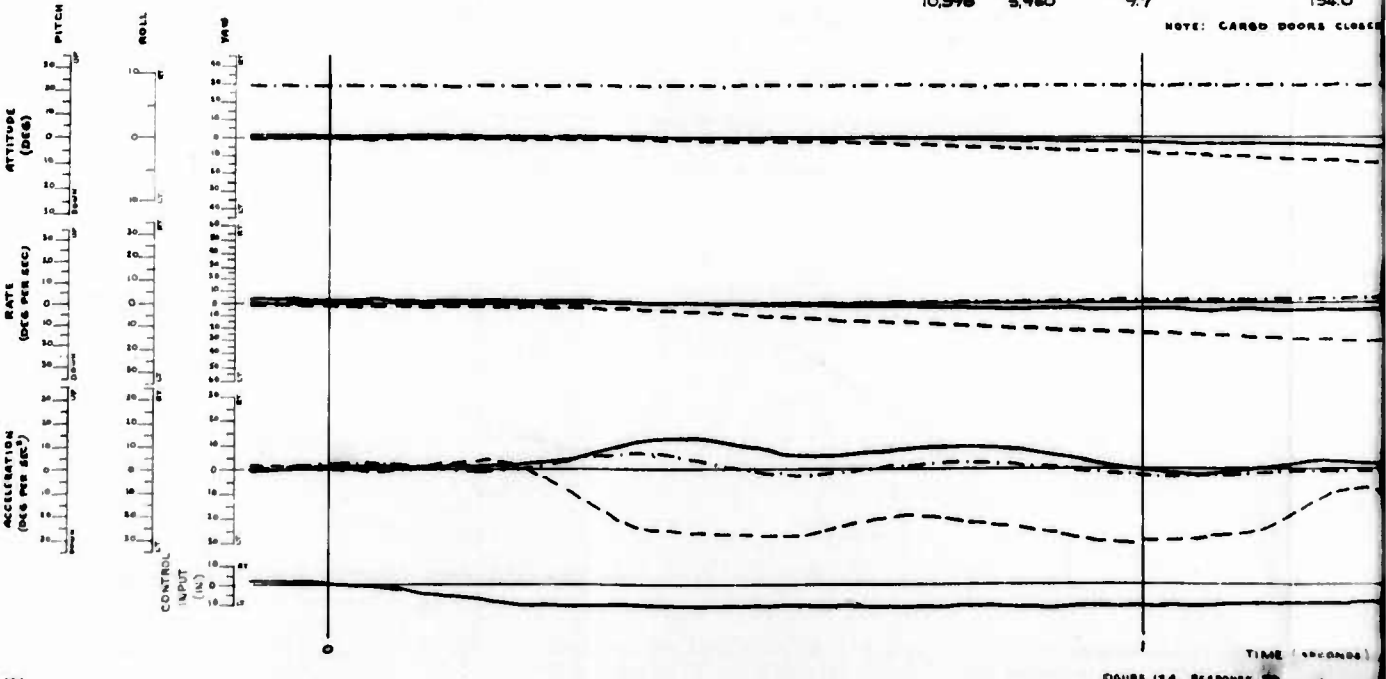


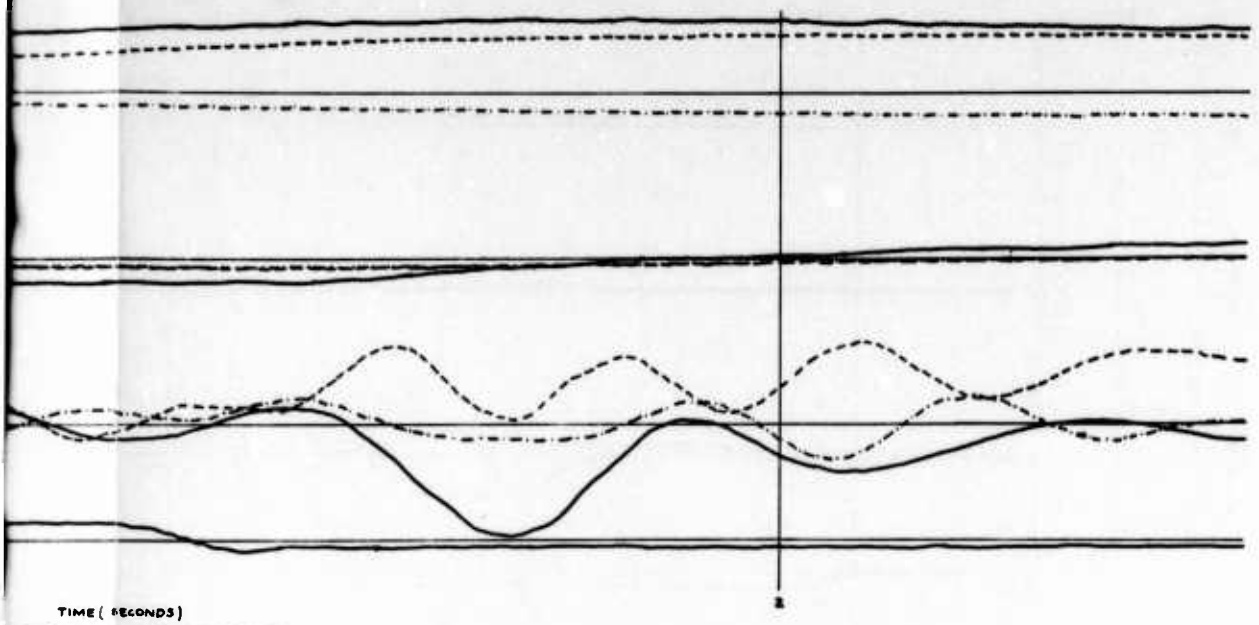
FIGURE 124. RESPONSE TO

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
134.0	323	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

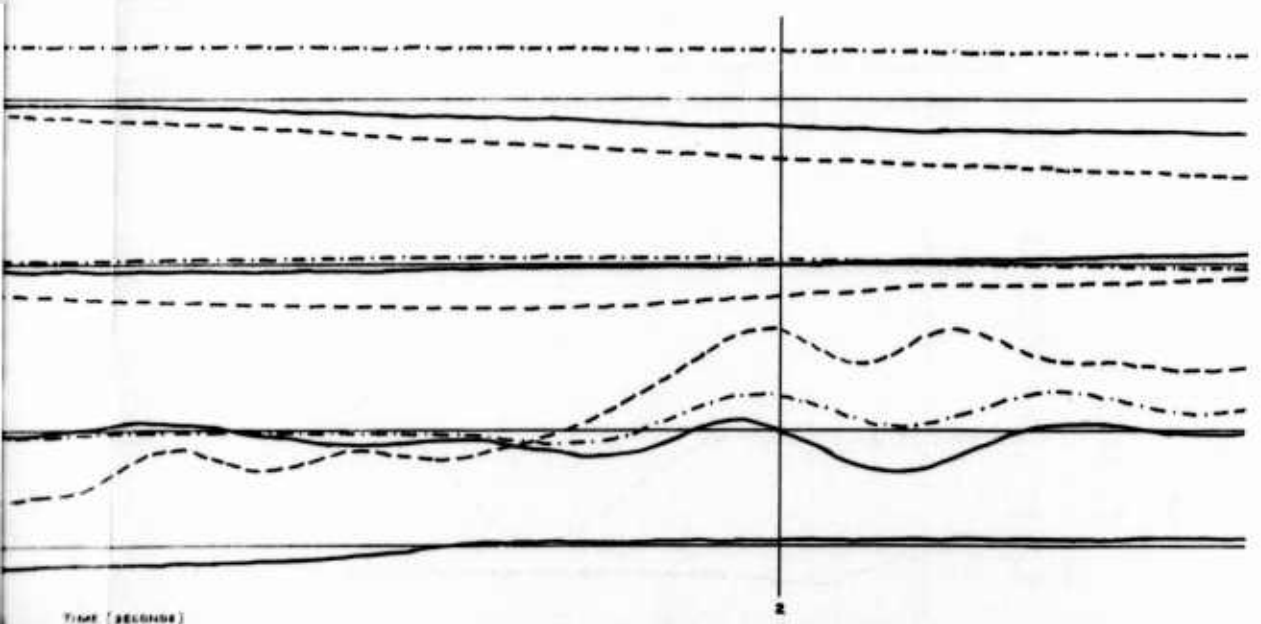
RESPONSE TO A RIGHT LATERAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
134.0	323	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

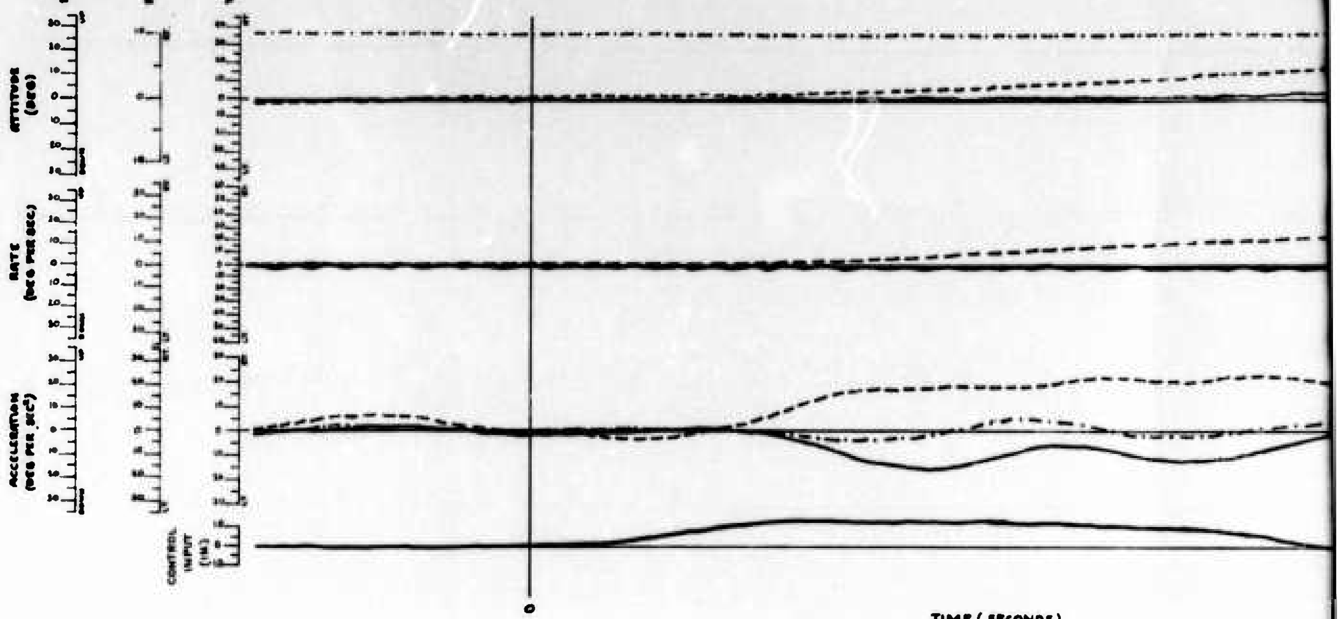
PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

RESPONSE TO A LEFT DIRECTIONAL PULSE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AI TEMPERATU (DEG C)
10,398	3,960	9.7



TIME (SECONDS)

FIGURE 125. RESPONSE TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF
T400-CP-400
LONGITU
FUSELAG

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
9,900	2,305	18.8

NOTE: CARGO

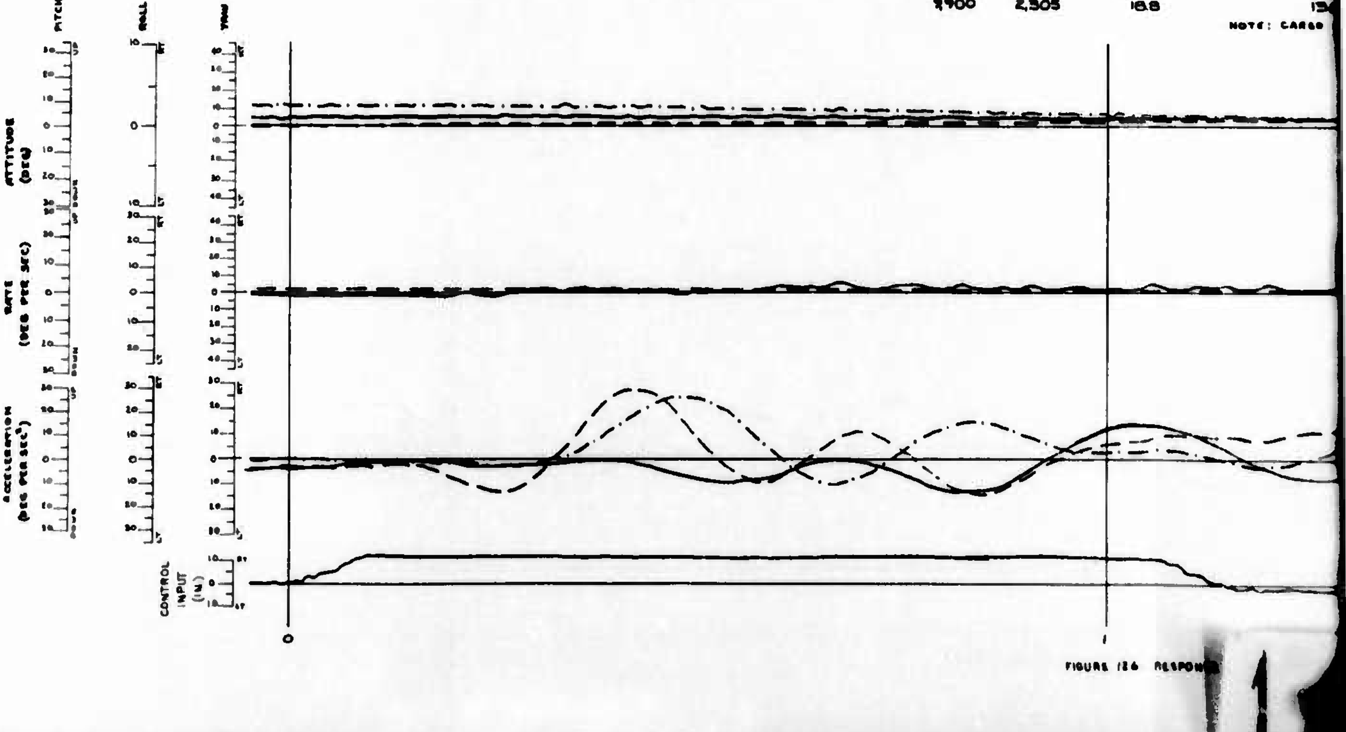


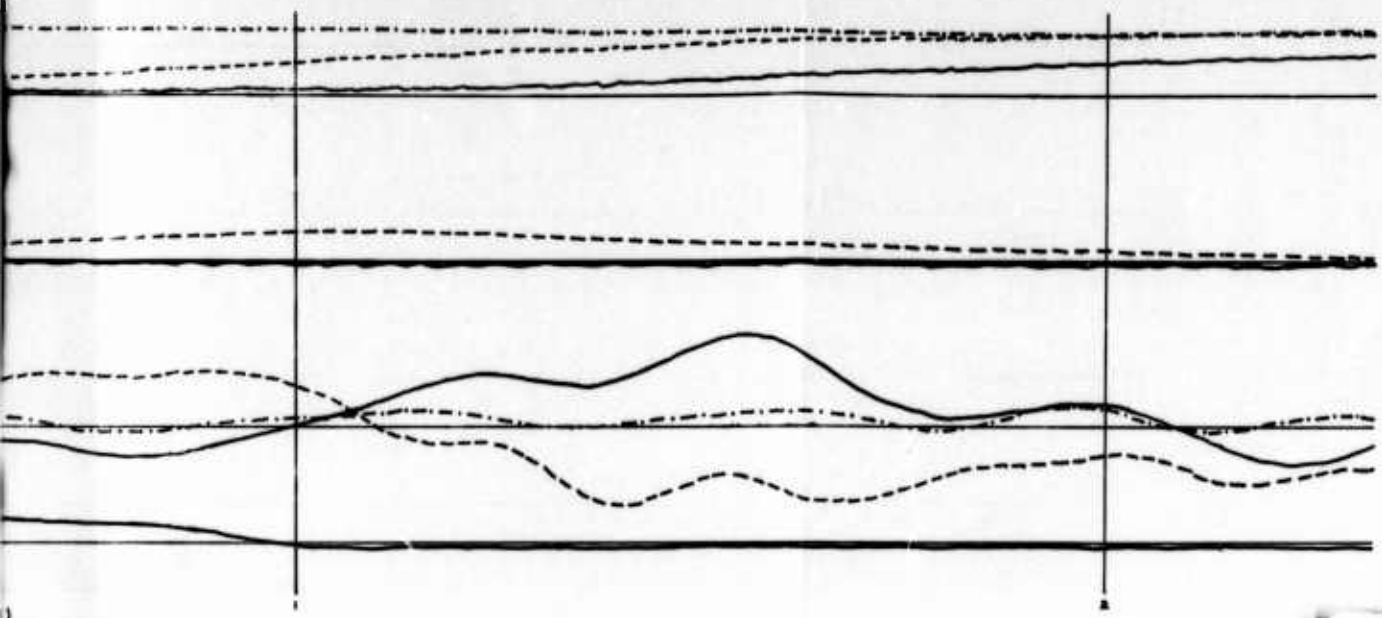
FIGURE 126 RESPON

UH-1N USAF S/N 66-16776
T400-CP-400 POWER PACKAGE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
9998	5,960	9.7	134.0	323	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



)
ECTIONAL PULSE

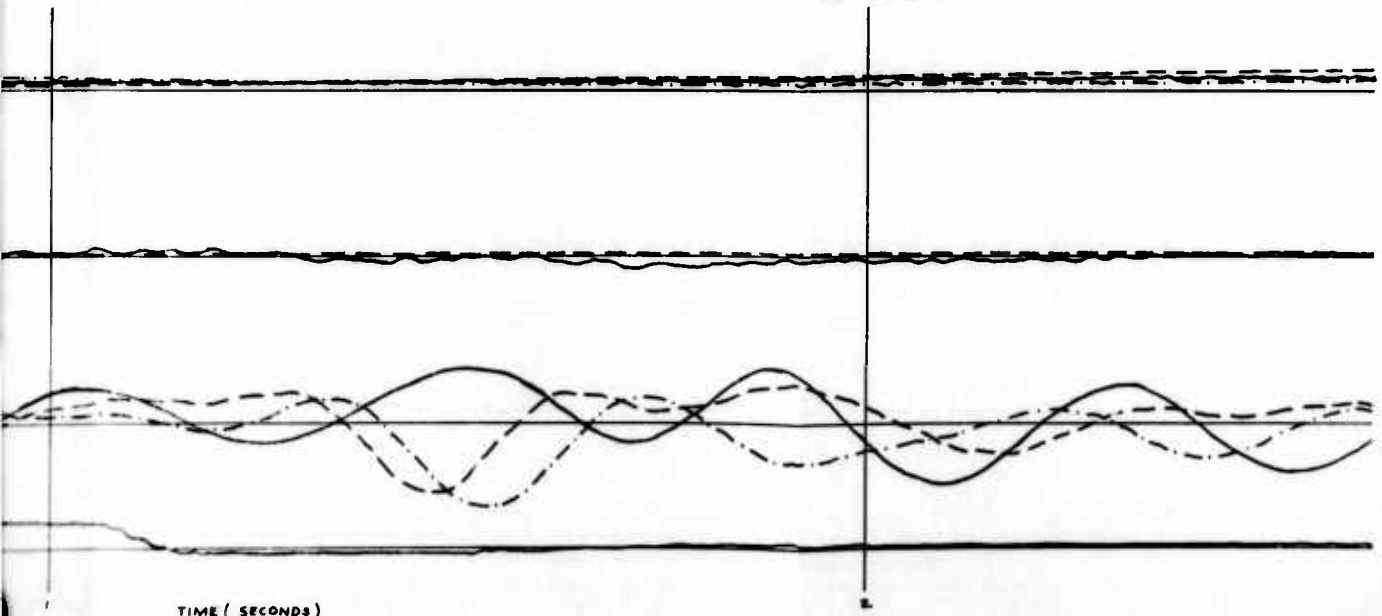
12

UH-1N USAF S/N 66-16776
T400-CP-400 POWER PACKAGE

IRE DE	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
)	18.8	138.2	321	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

PONSE TO A FORWARD LONGITUDINAL PULSE

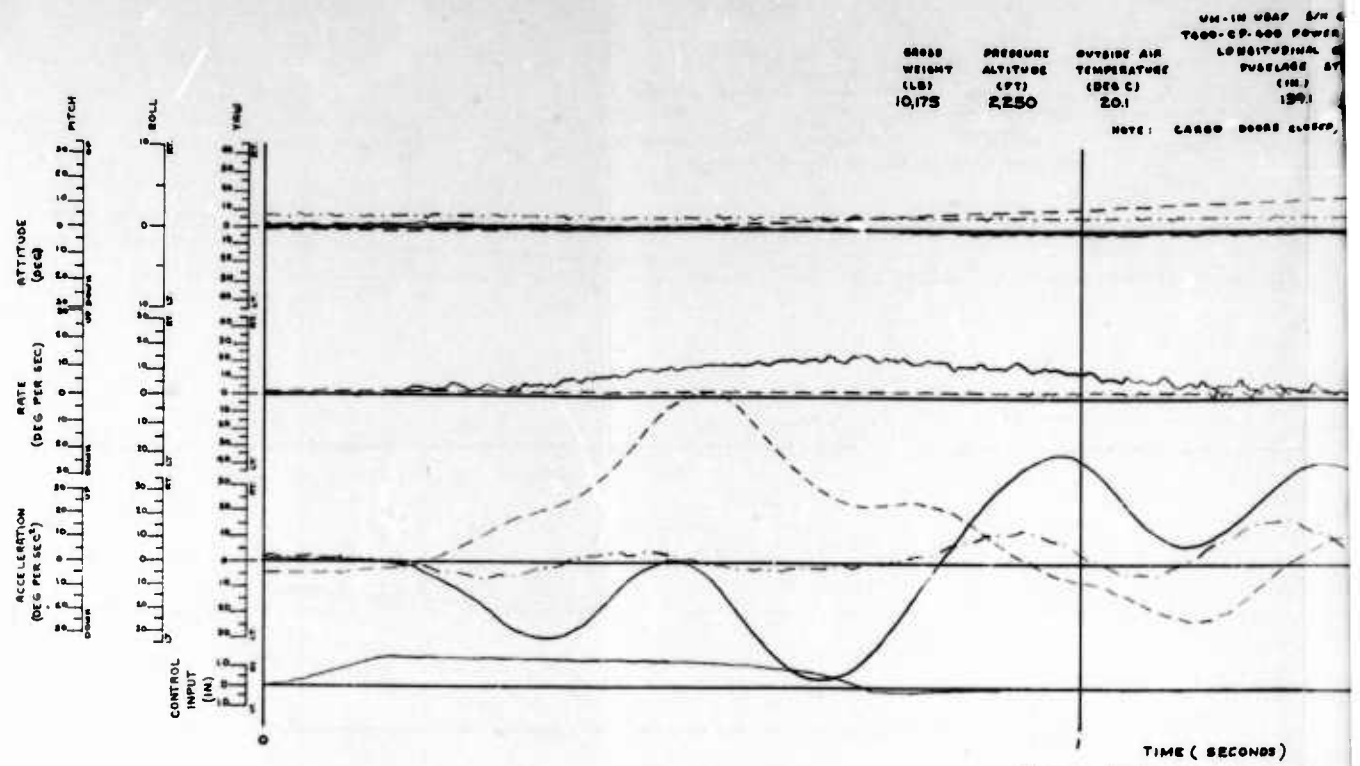


FIGURE 127. RESPONSE TO A RIGHT DIRECTIONAL

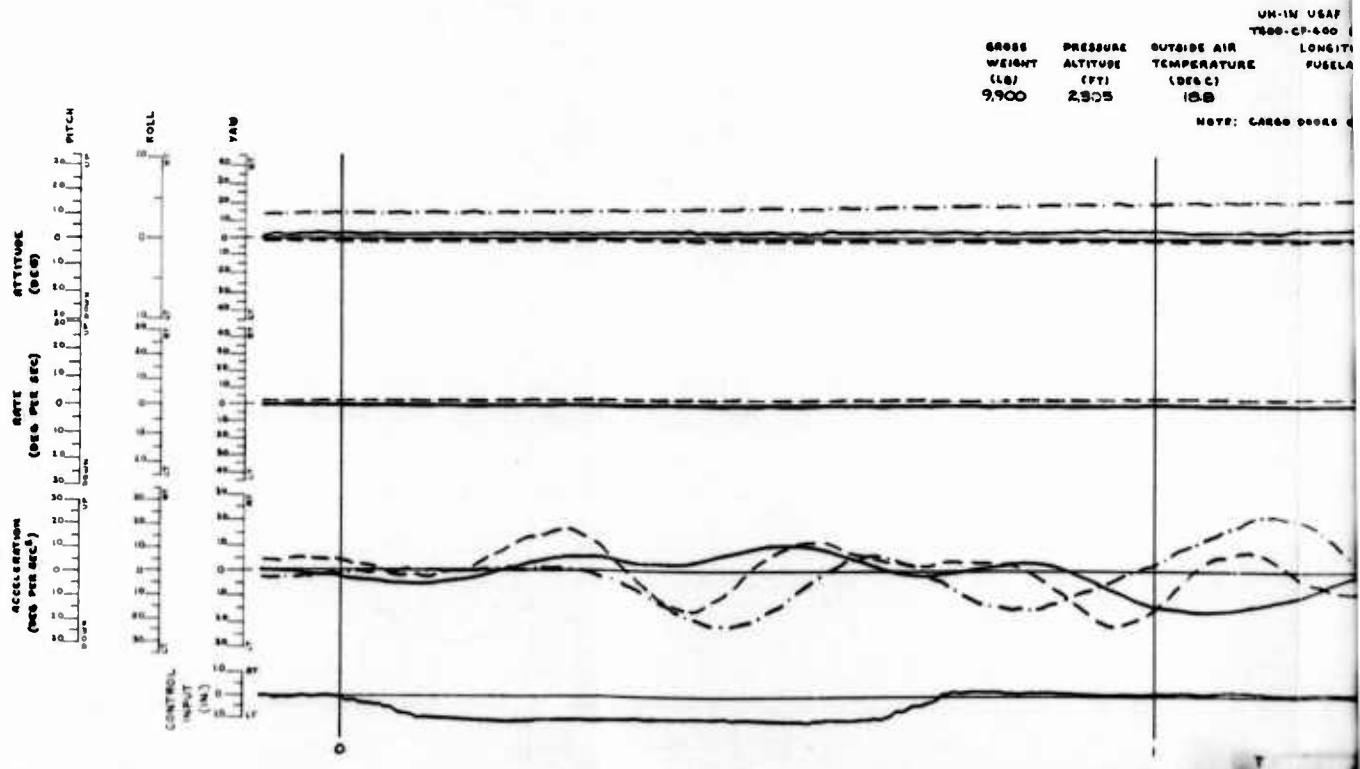


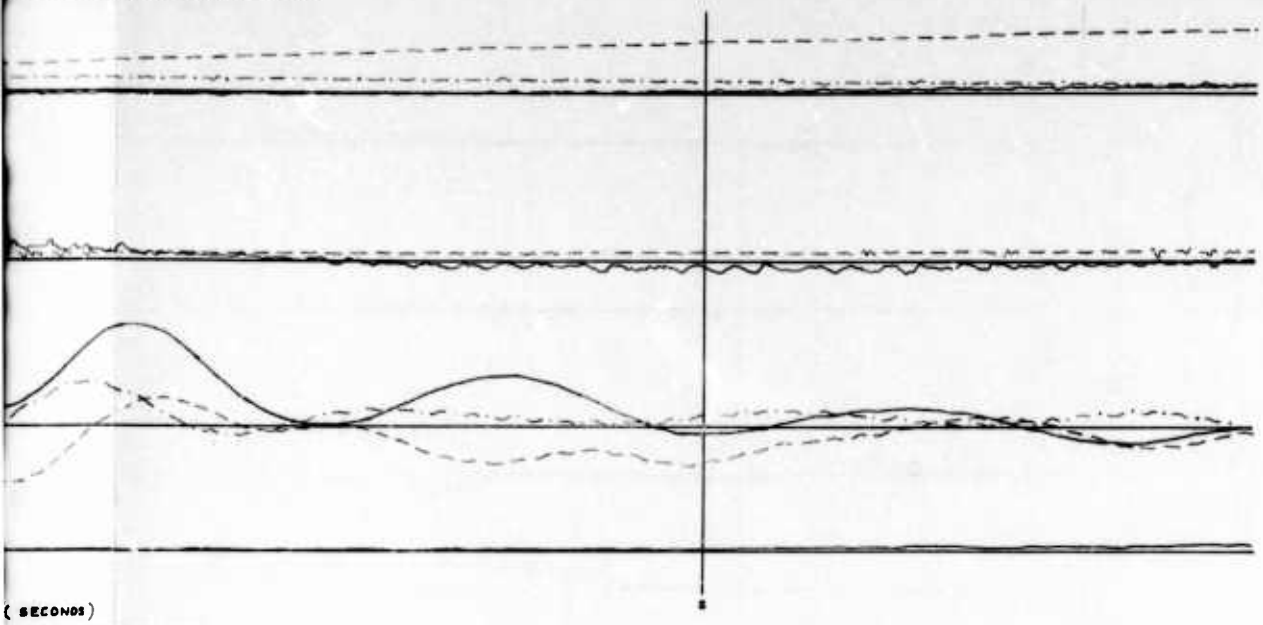
FIGURE 128. RESPON

UH-1N USAF S/N 68-10776
T500-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
139.1	322	0	HOVER, IGE

PITCH — · — · —
ROLL ————
YAW — — — —

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.



(SECONDS)

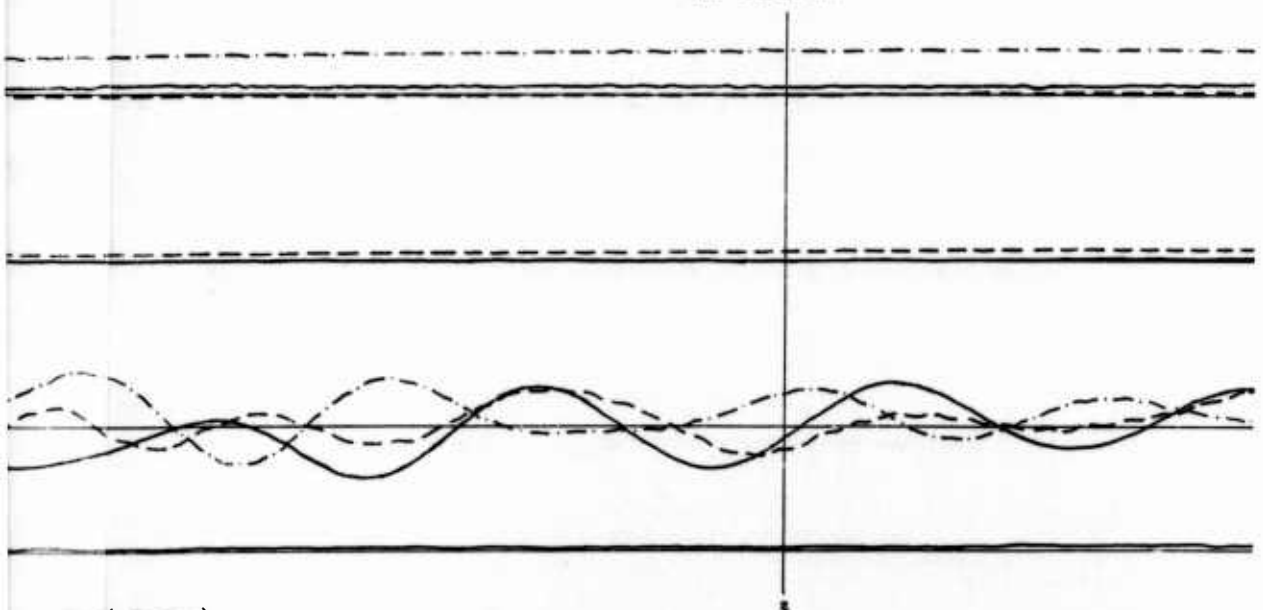
A RIGHT DIRECTIONAL PULSE

UH-1N USAF S/N 68-10776
T500-CP-400 POWER PACKAGE

DE AIR ERATURE °C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
38	138.2	321	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

RESPONSE TO AN AFT LONGITUDINAL PULSE

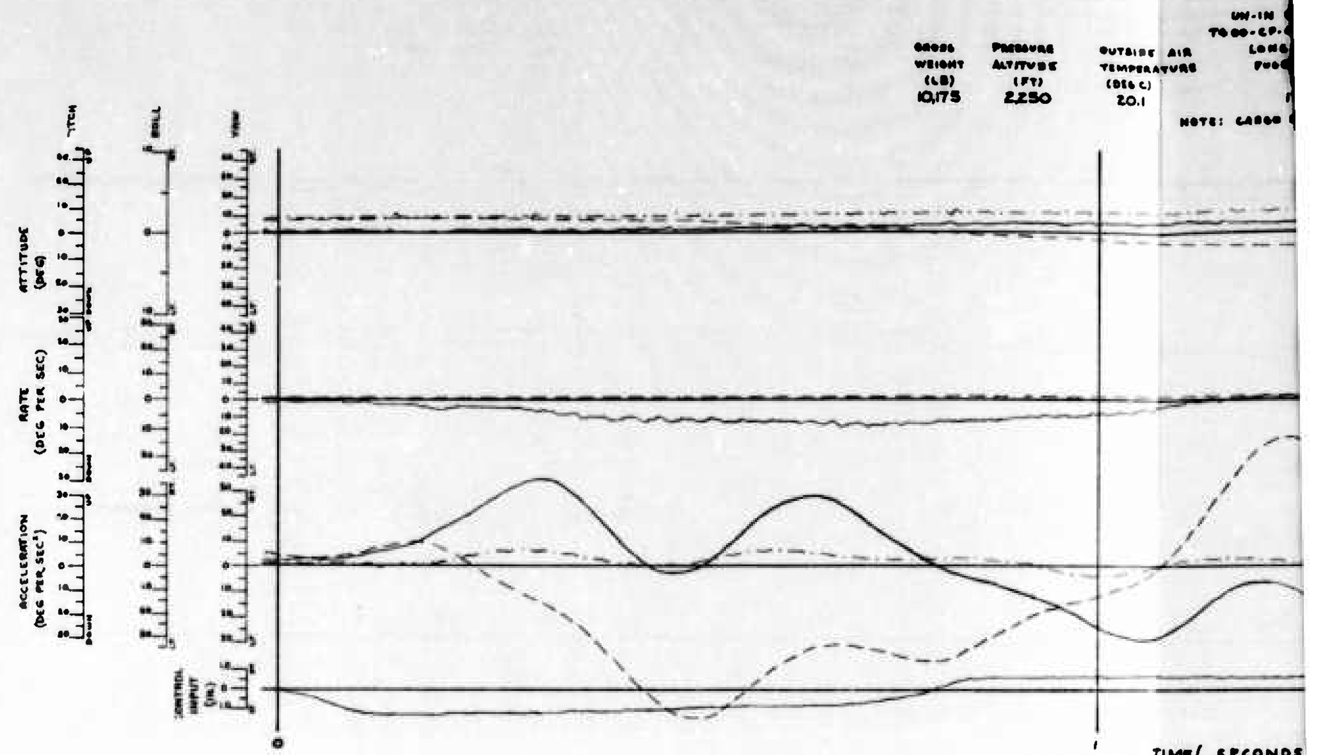


FIGURE 129. RESPONSE TO A LEFT DIRECTI

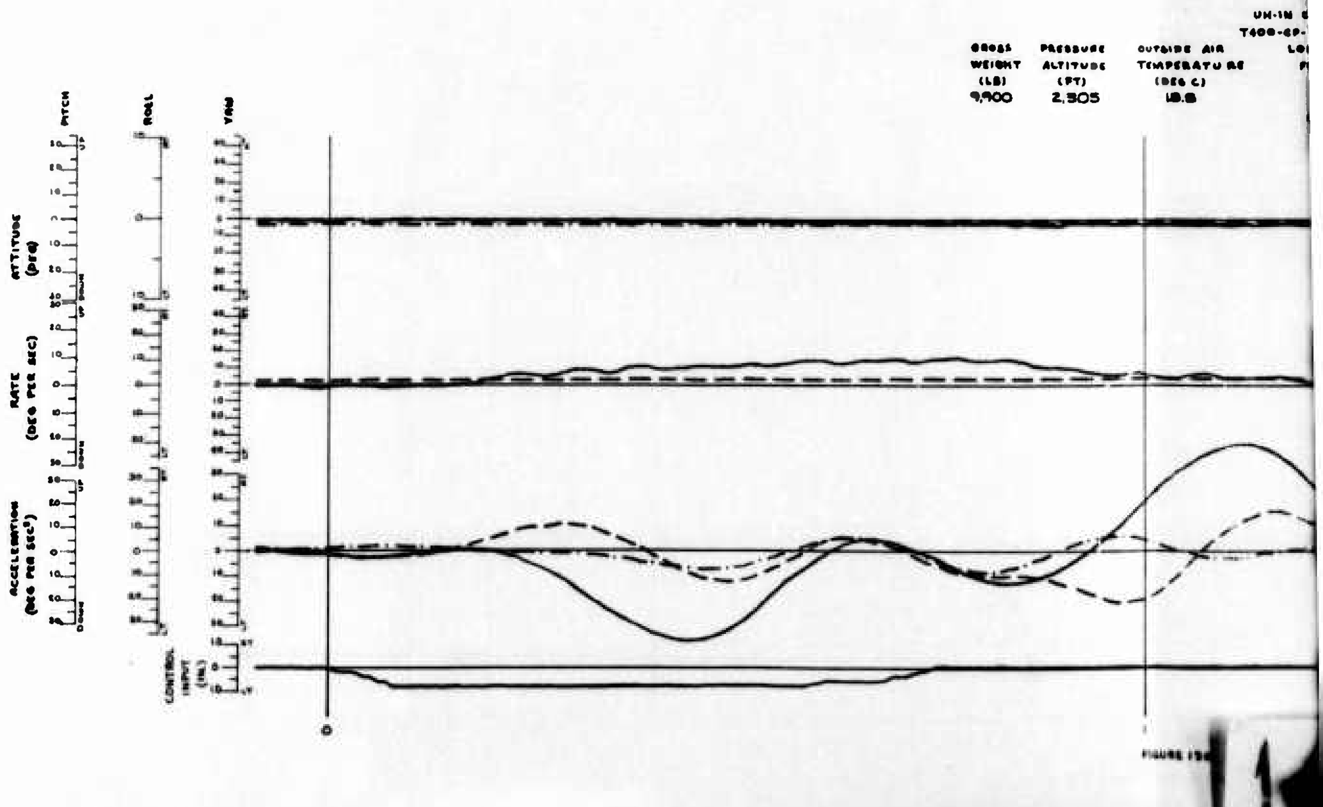


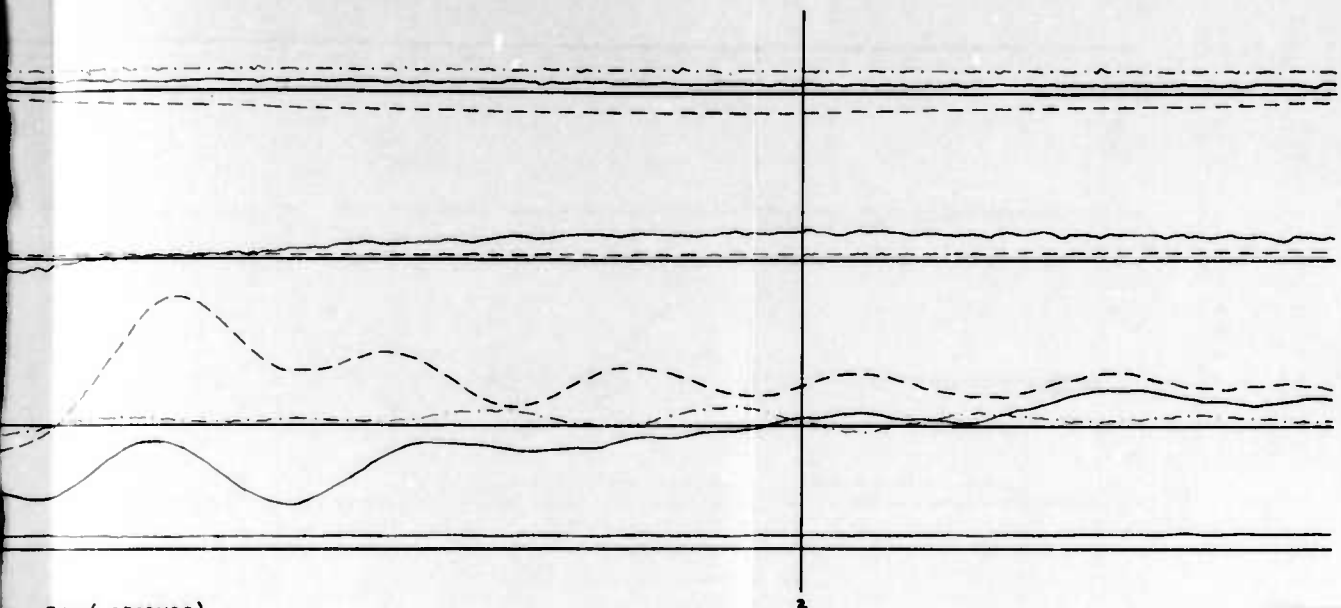
FIGURE 13

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
10.1	139.1	322	0	HOVER, IGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ———
YAW — — — —



TIME (SECONDS)

RESPONSE TO A LEFT DIRECTIONAL PULSE

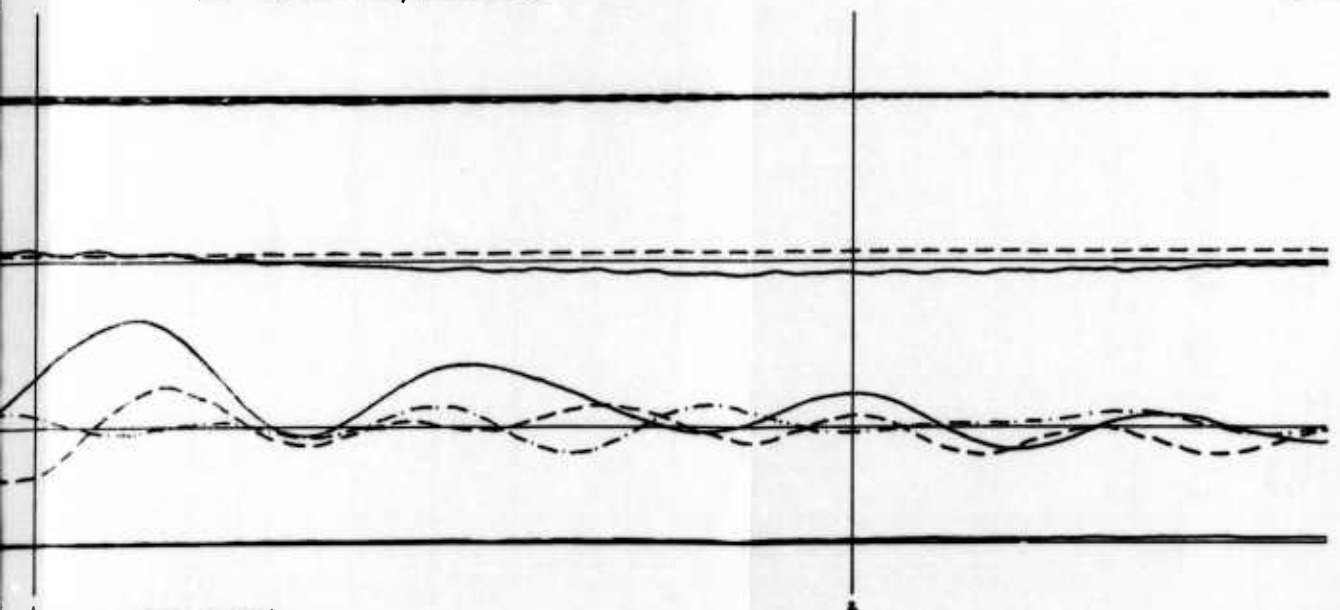
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
18.8	138.2	321	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ———
YAW — — — —



TIME (SECONDS)

FIGURE 130. RESPONSE TO A LEFT LATERAL PULSE

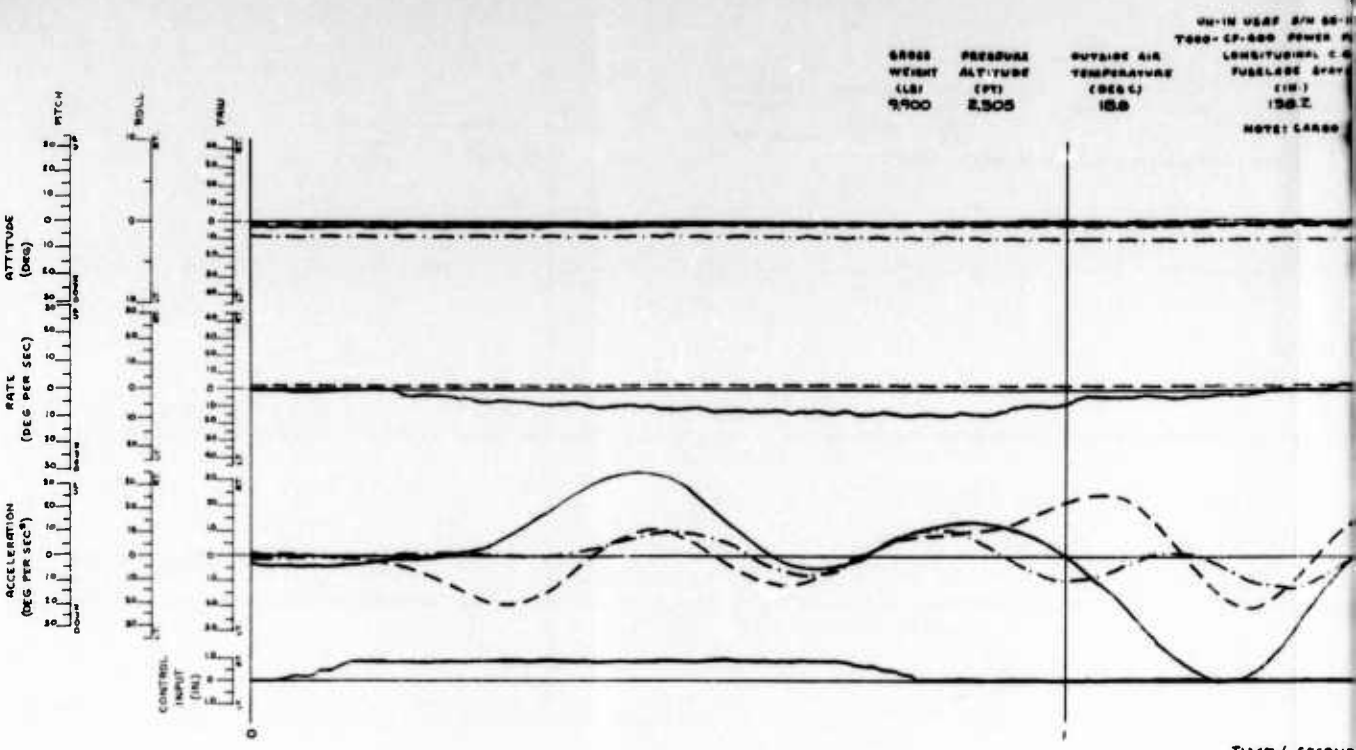


FIGURE 131. RESPONSE TO A RIGI

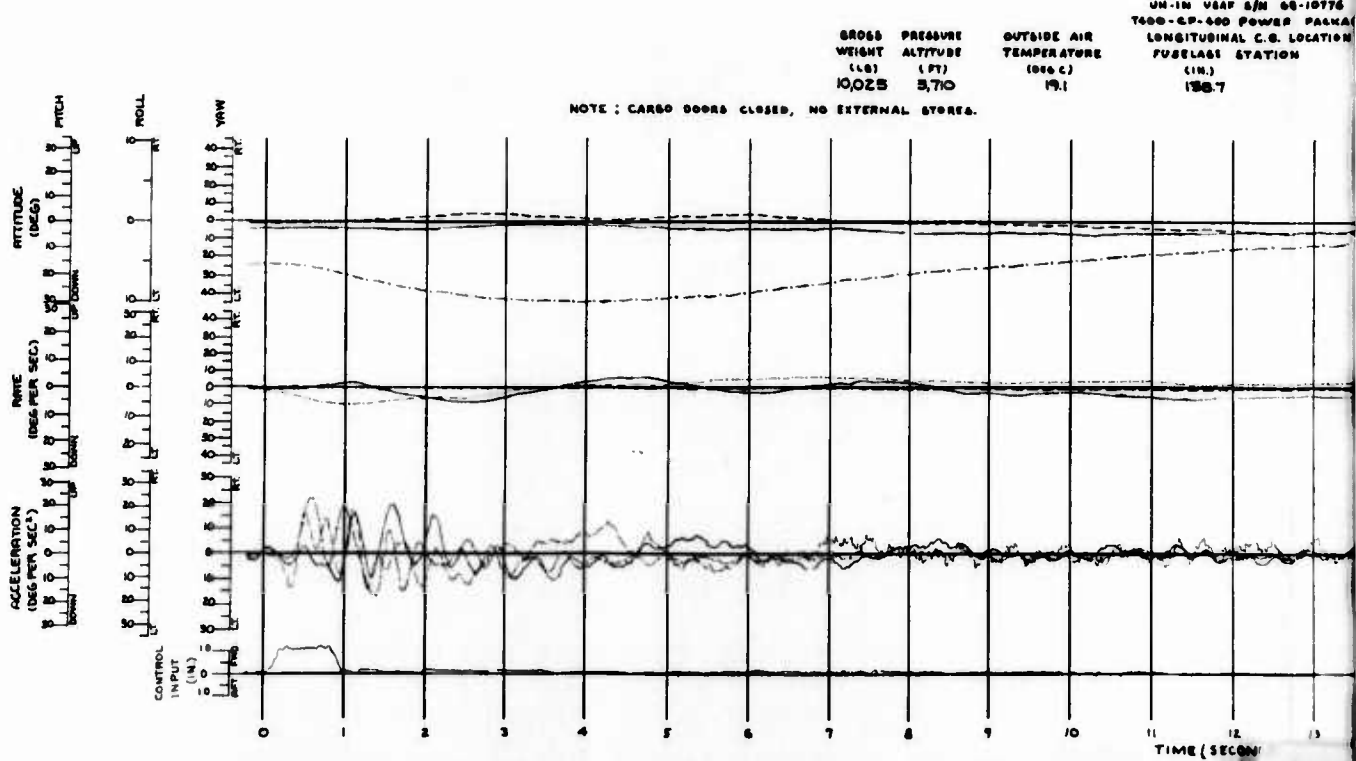


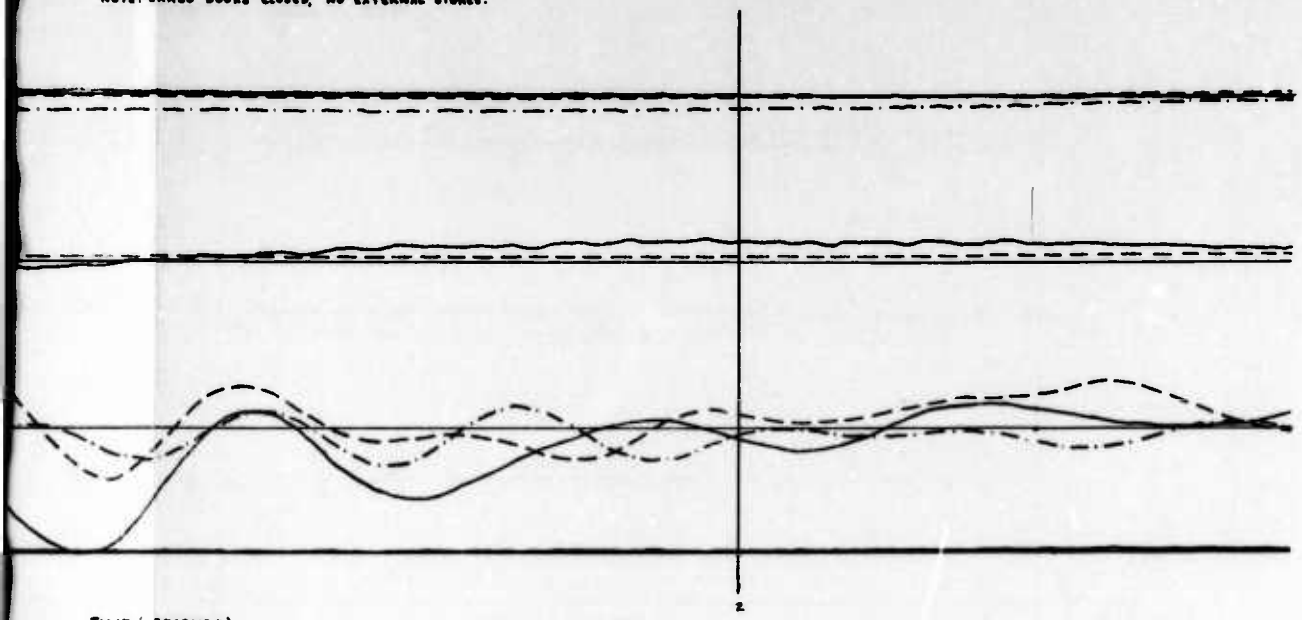
FIGURE 132. RESPONSE TO A FORWARD

UH-1N USAF S/N 68-10776
T000-GP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.2	321	0	HOVER, OGE

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ———
YAW — — — —



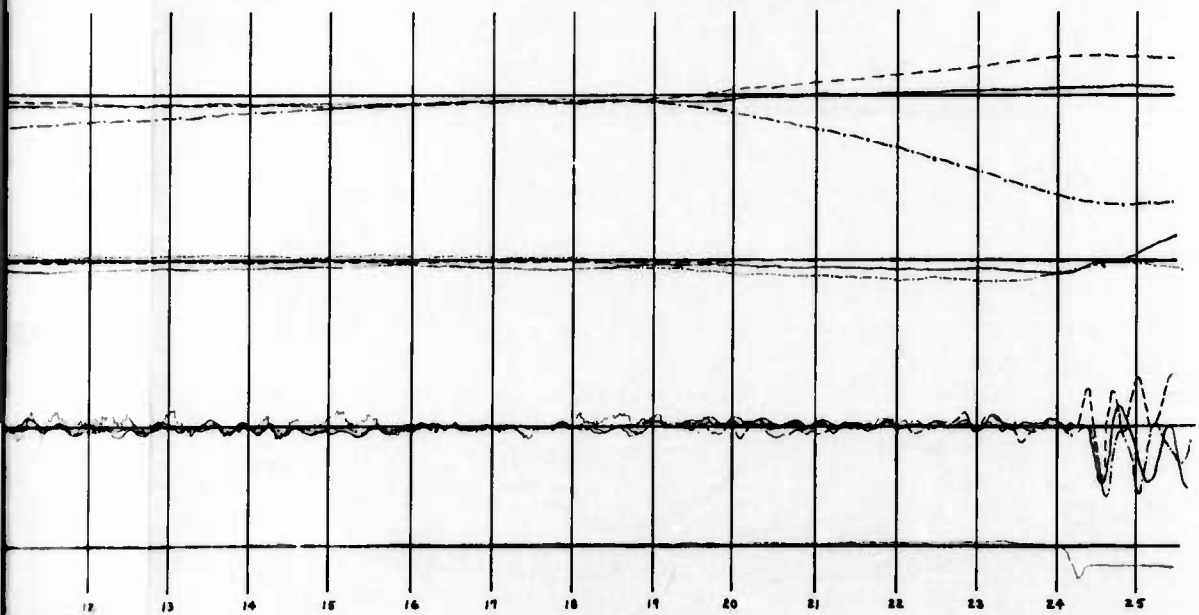
TIME (SECONDS)

RE (3). RESPONSE TO A RIGHT LATERAL PULSE

UH-1N USAF S/N 68-10776
T0-GP-400 POWER PACKAGE

ONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	CLIMB

PITCH — · — · —
ROLL ———
YAW — — — —



TIME (SECONDS)

) FORWARD LONGITUDINAL PULSE

UH-1N USAF S/N 68-1077(
T400-CP-400 POWER PA(

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LO FUSELAGE STATION (IN.)
10,025	3,710	19.1	138.7

NOTE: CARGO DOORS CLOSED, NO

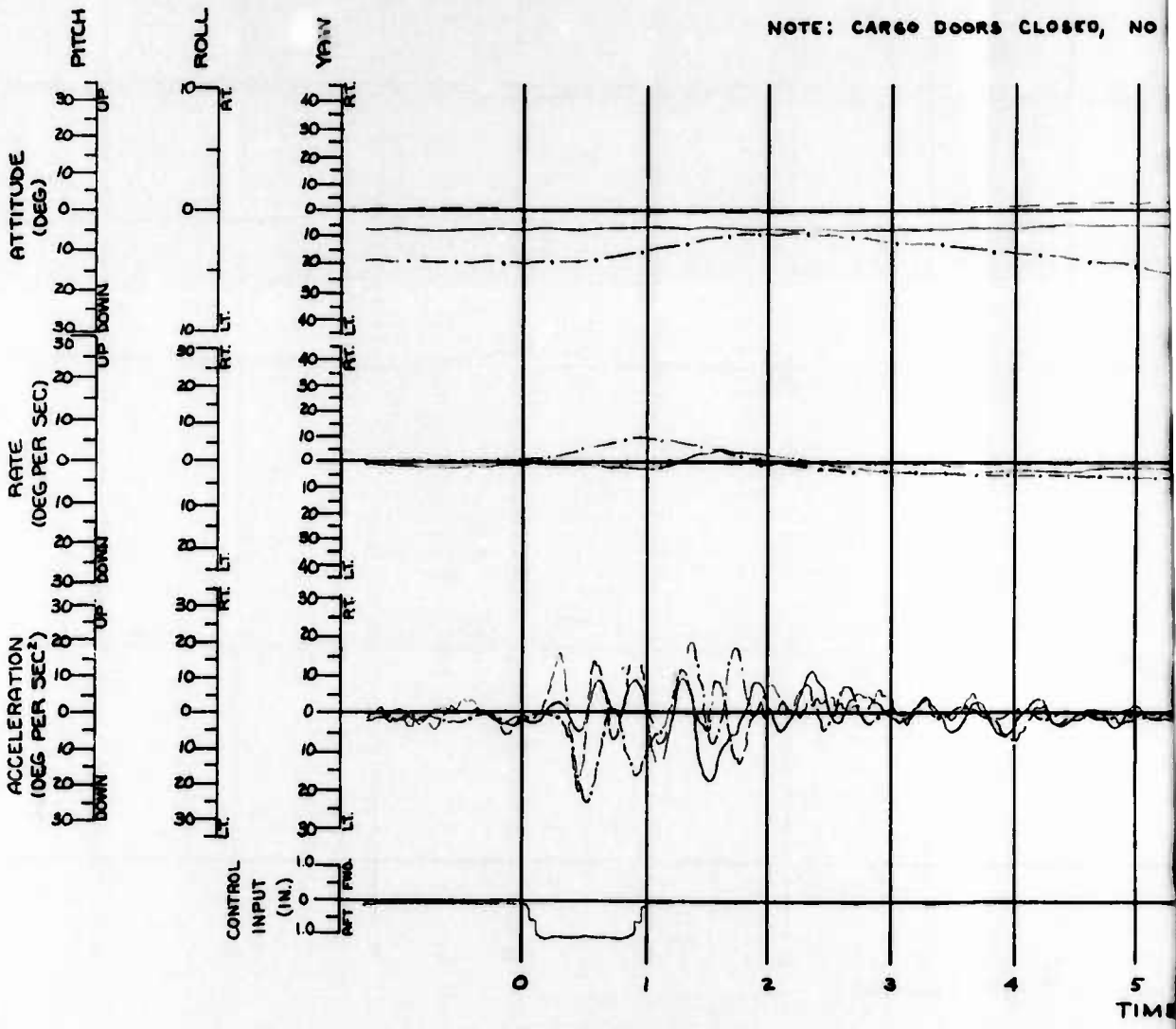


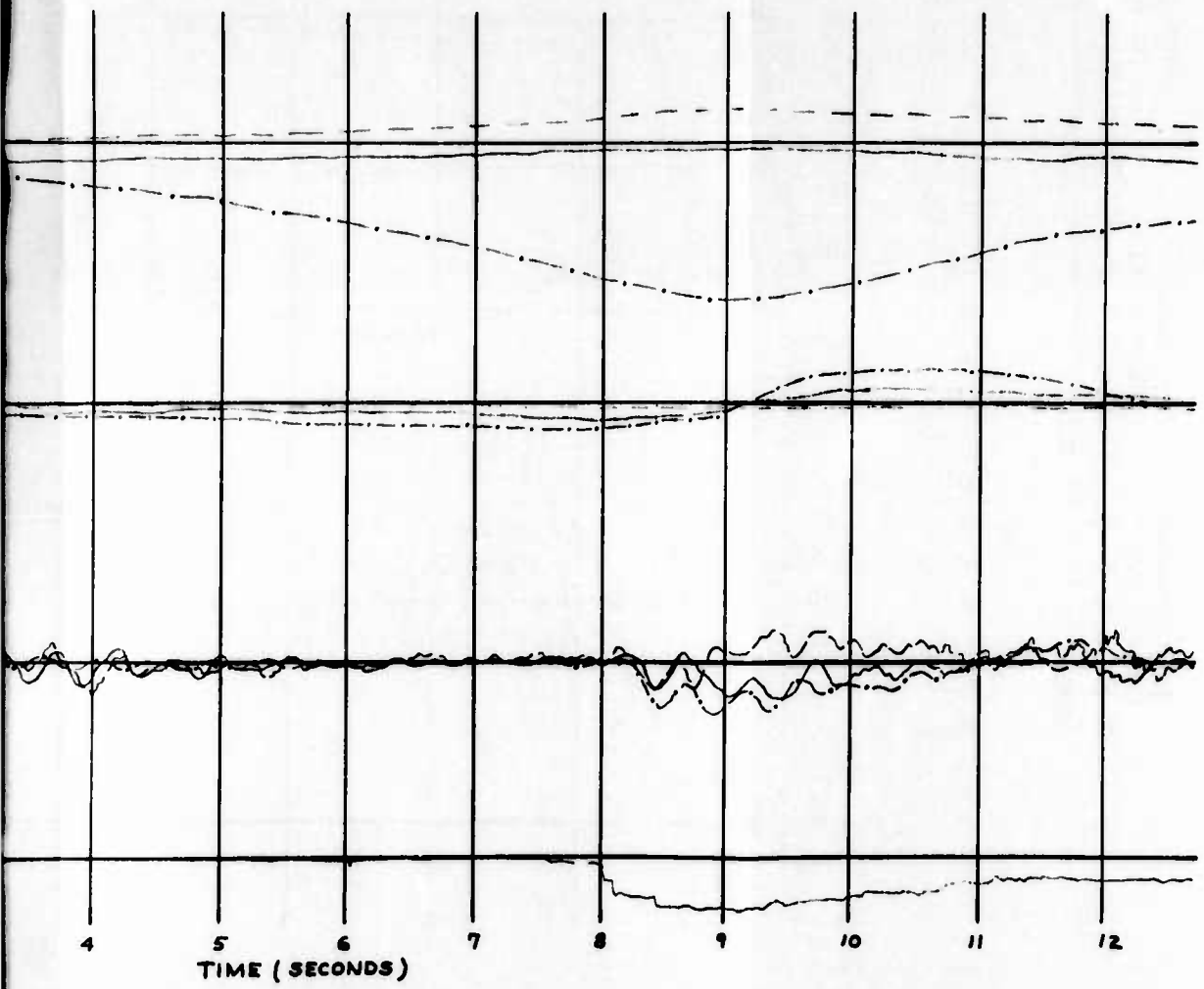
FIGURE 133. RESPONSE

N USAF S/N 68-10776
)-CP-400 POWER PACKAGE

ONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	CLIMB

PITCH -·-·-·-
ROLL ———
YAW – – – –

OORS CLOSED, NO EXTERNAL STORES.



12

33. RESPONSE TO AN AFT LONGITUDINAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAG
LONGITUDINAL C.G. LOCAT

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	FUSELAGE STATION (IN.)
10,025	3,710	19.1	138.7

NOTE: CARGO DOORS CLOSED, NO EXTERN

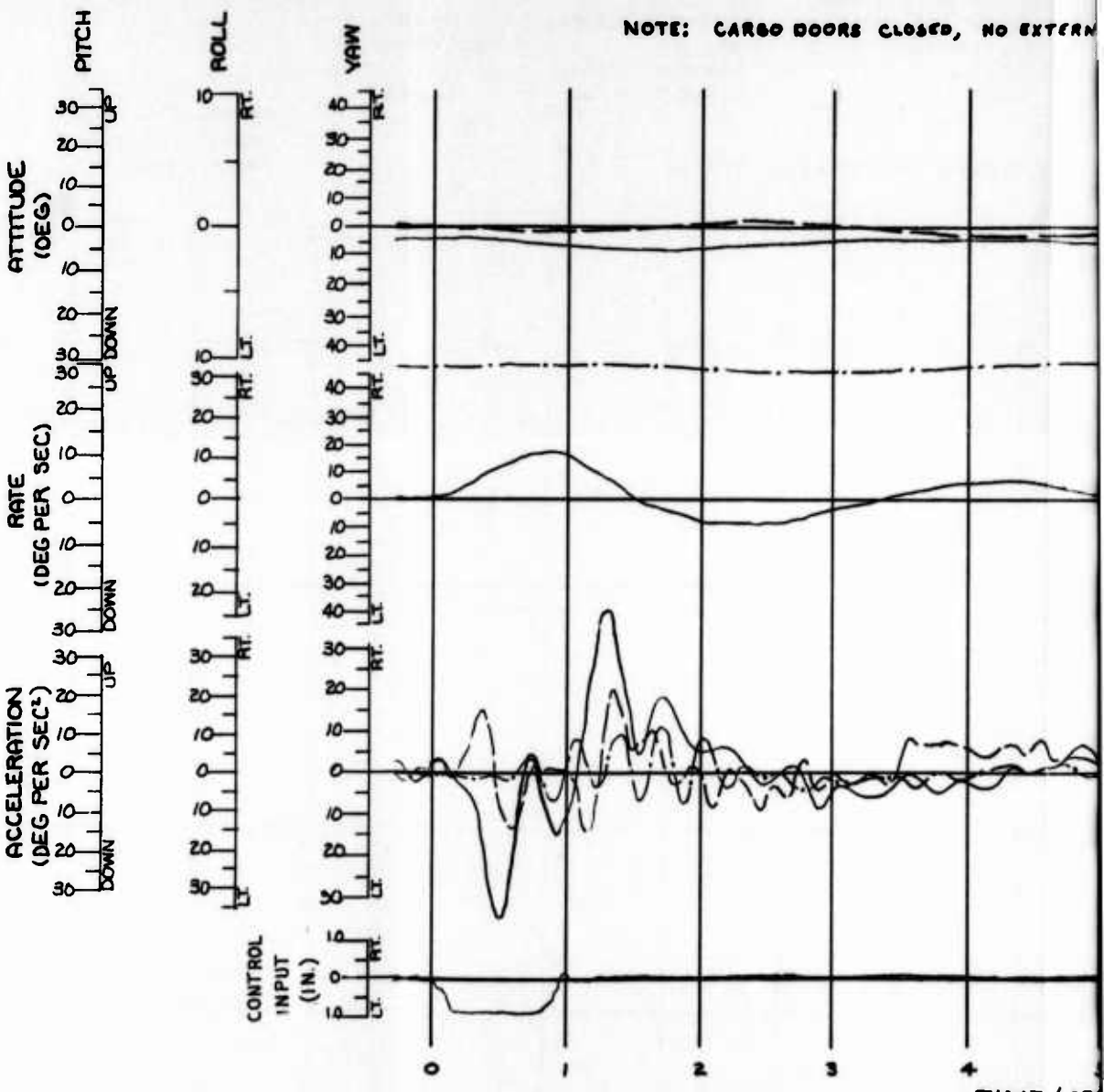


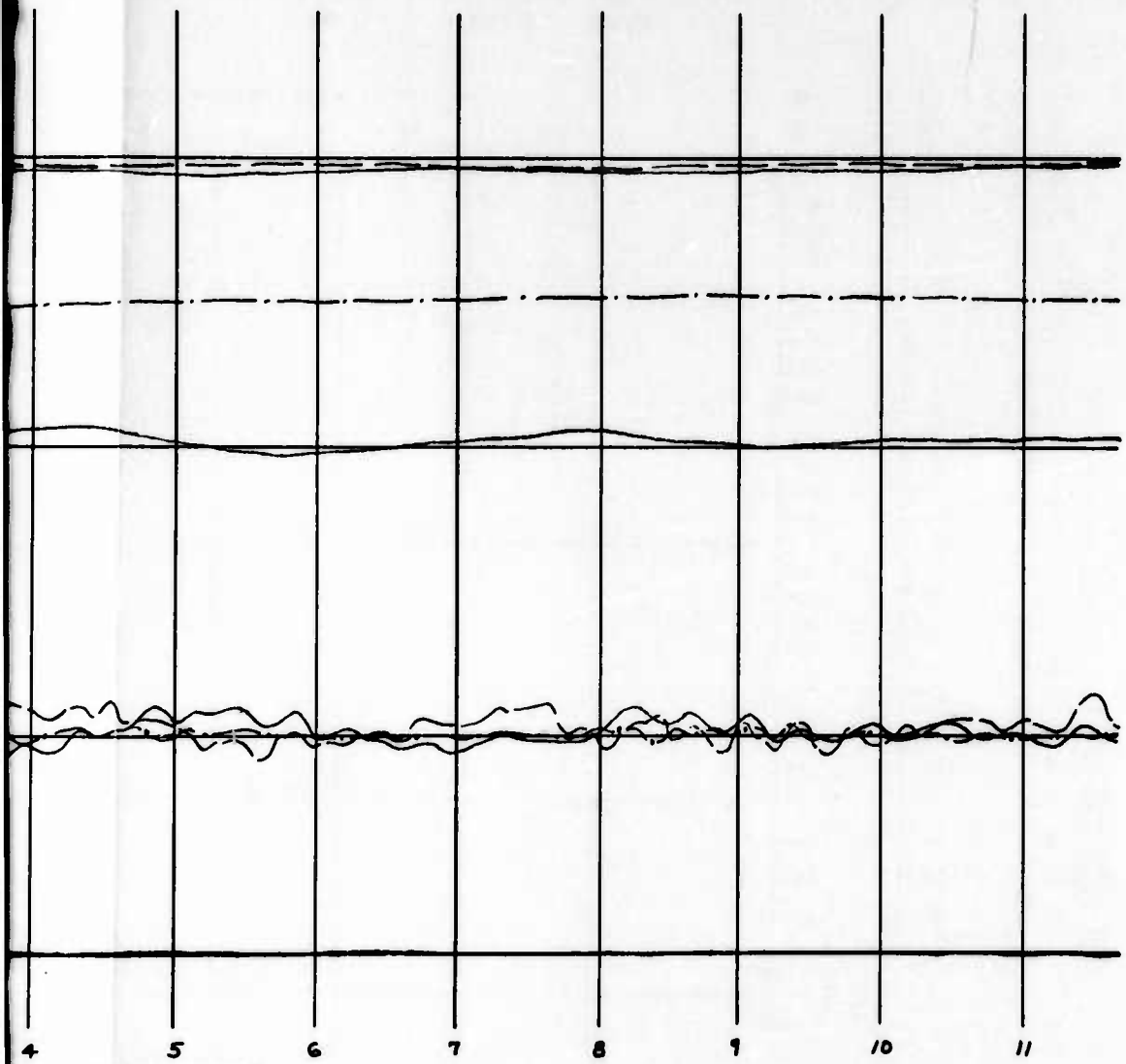
FIGURE 134. RESPONSE TO A LE

68-10776
VER PACKAGE

C.G. LOCATION TATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	312	63	CLIMB

, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————
YAW – – – –



A LEFT LATERAL PULSE

12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAG

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCA FUSELAGE STATION (IN.)
10,025	3,710	19.1	138.7

NOTE: CARGO DOORS CLOSED, NO E

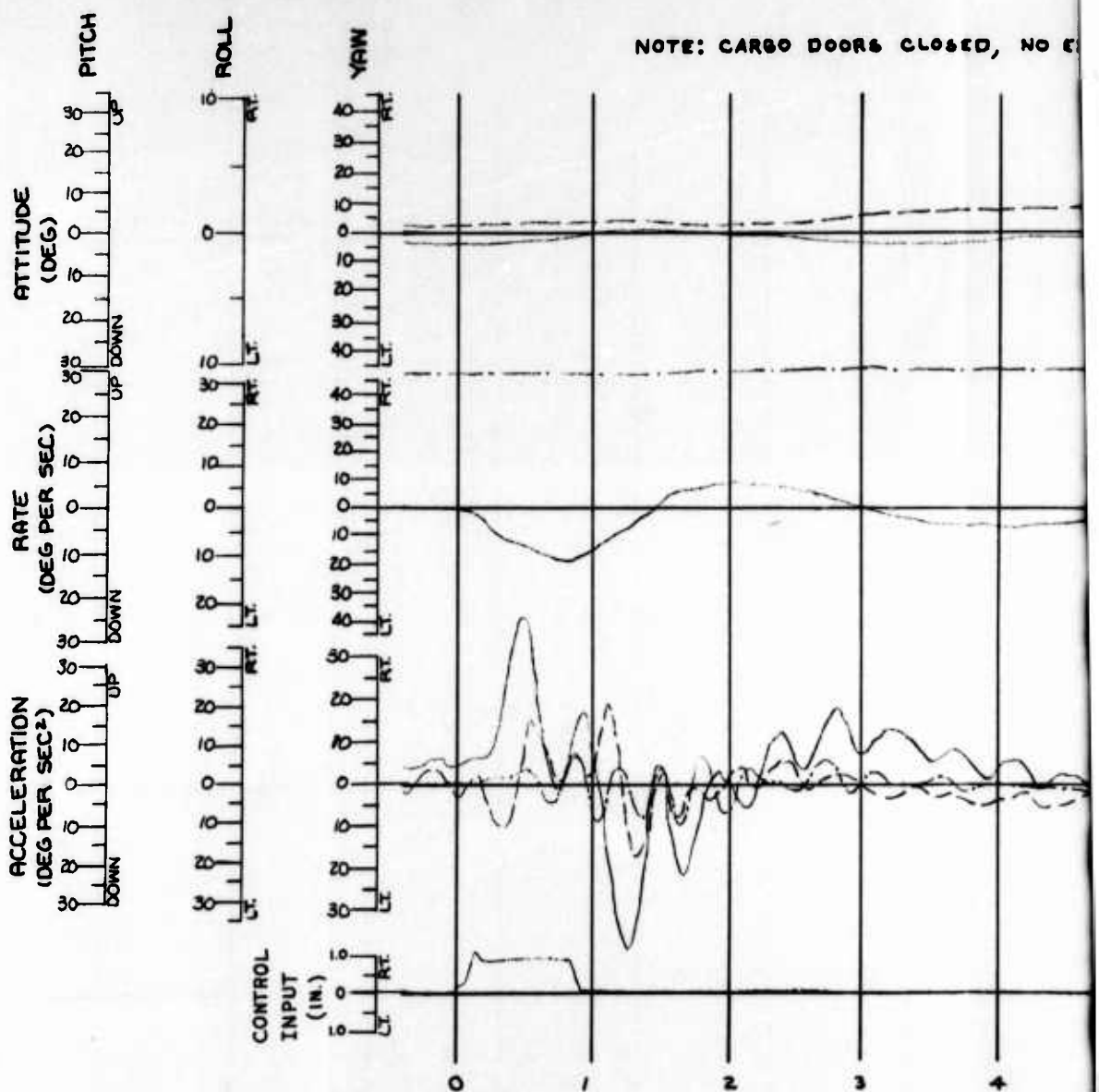


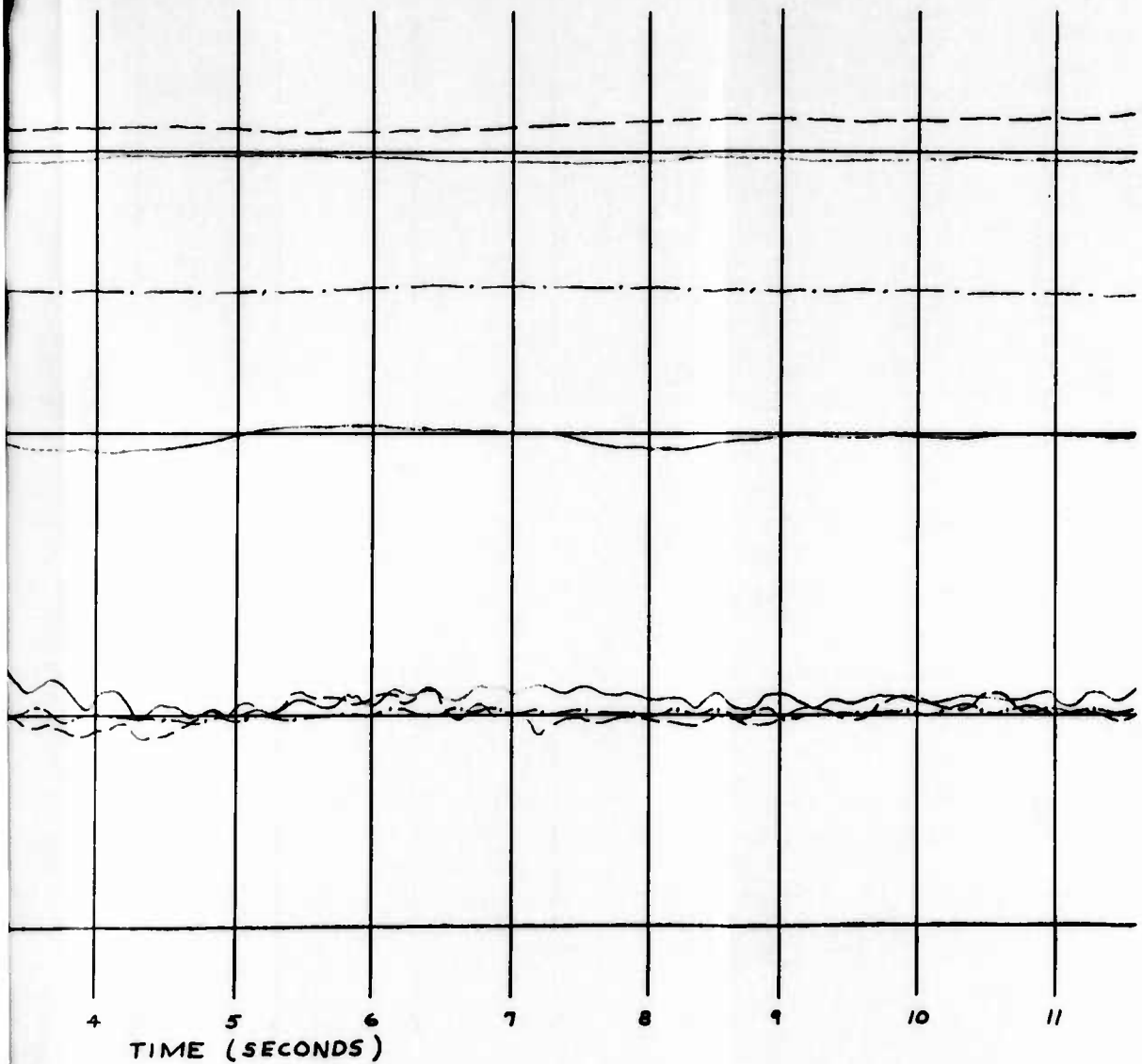
FIGURE 135. RESPONSE TO A RIGHT

/N 68-10778
WER PACKAGE

NAL C.G. LOCATION STATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
.7	312	69	CLIMB

LOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————
YAW — — — —



12

TO A RIGHT LATERAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)
10,025	3,710	19.1	138.7

NOTE: CARGO DOORS CLOSED, NO EXTERN

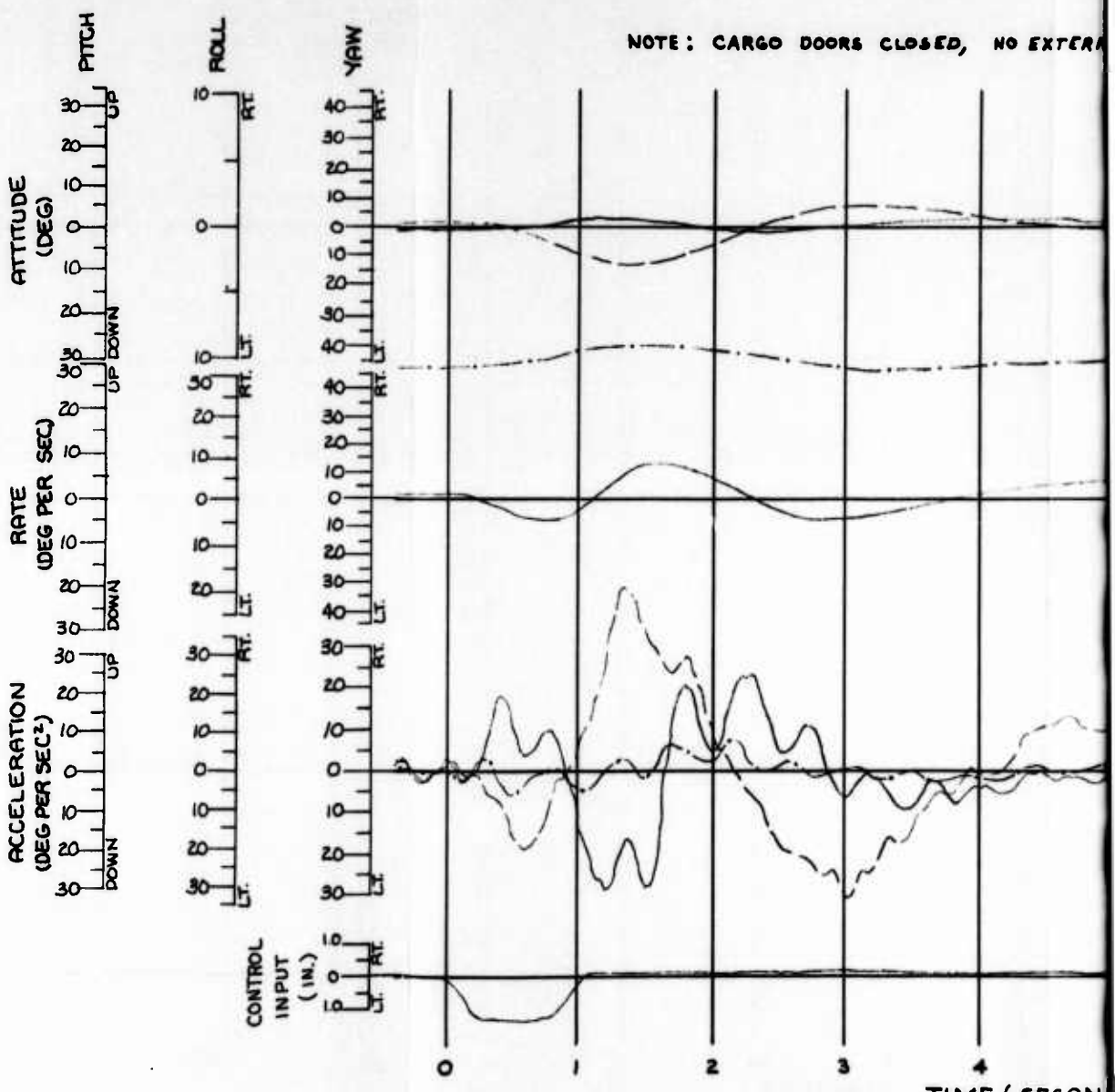


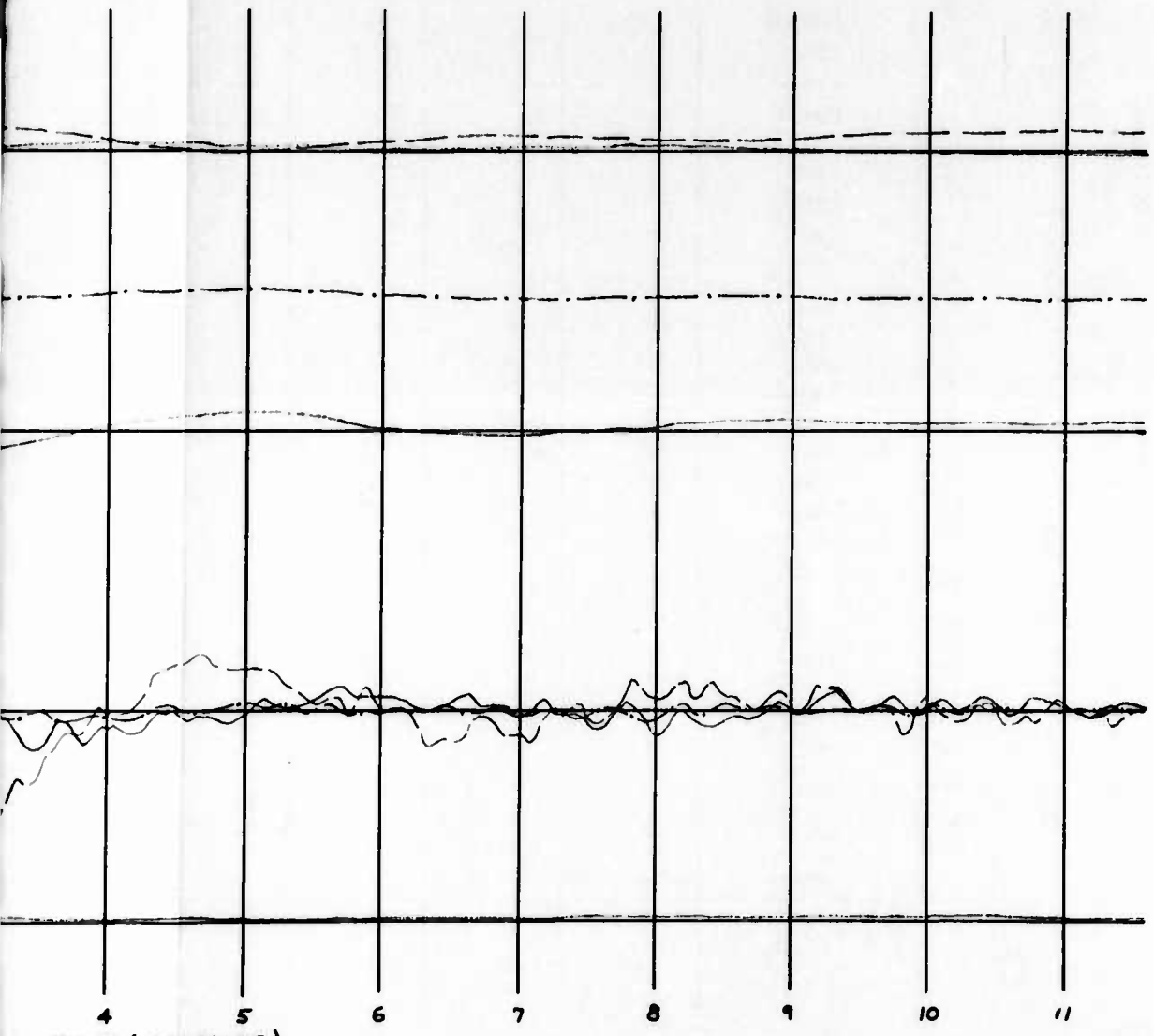
FIGURE 136. RESPONSE TO A LEFT

AF S/N 68-10776
POWER PACKAGE

UDINAL C.G. LOCATION IGE STATION N.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
38.7	312	63	CLIMB

CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



SE TO A LEFT DIRECTIONAL PULSE

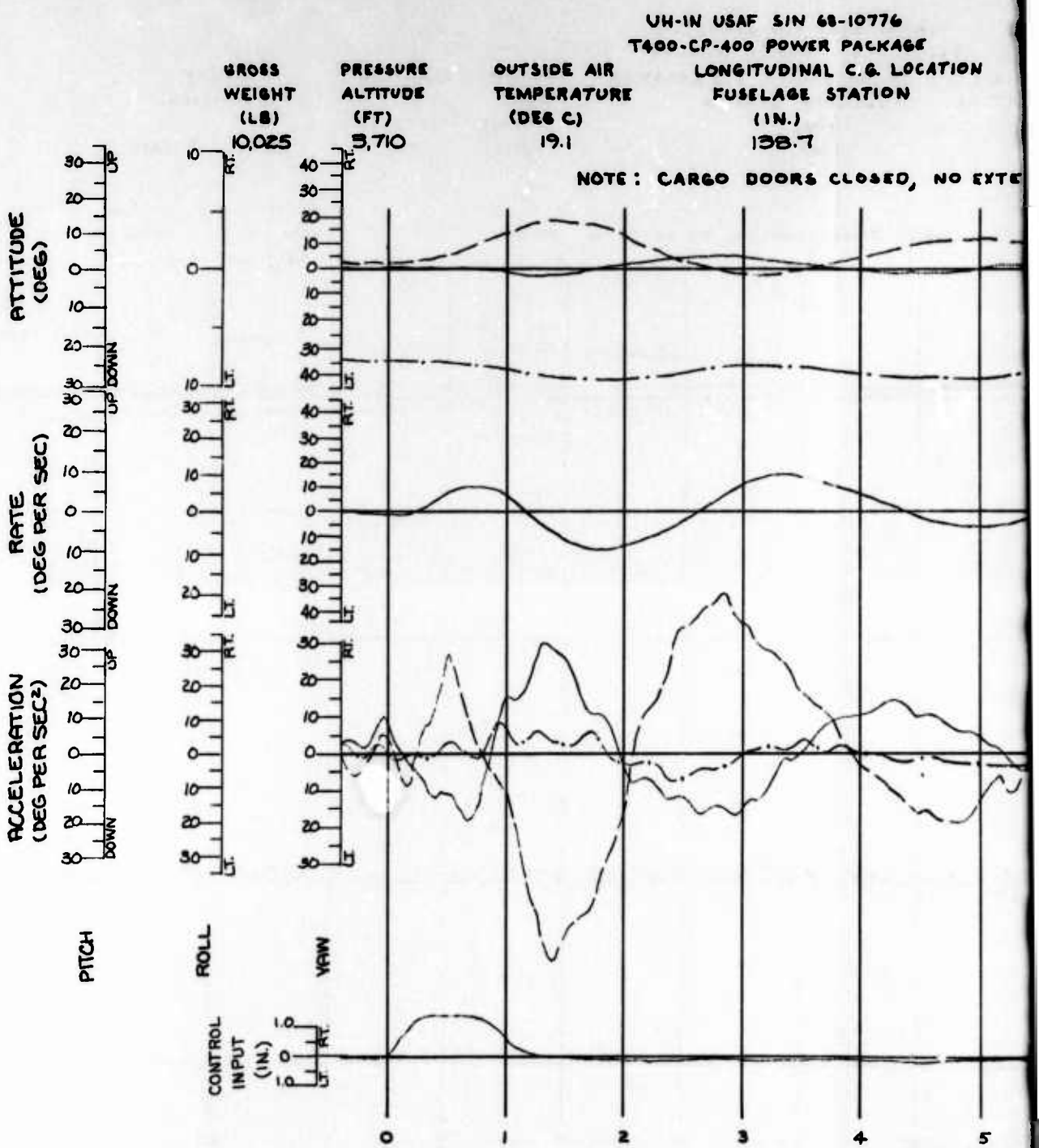
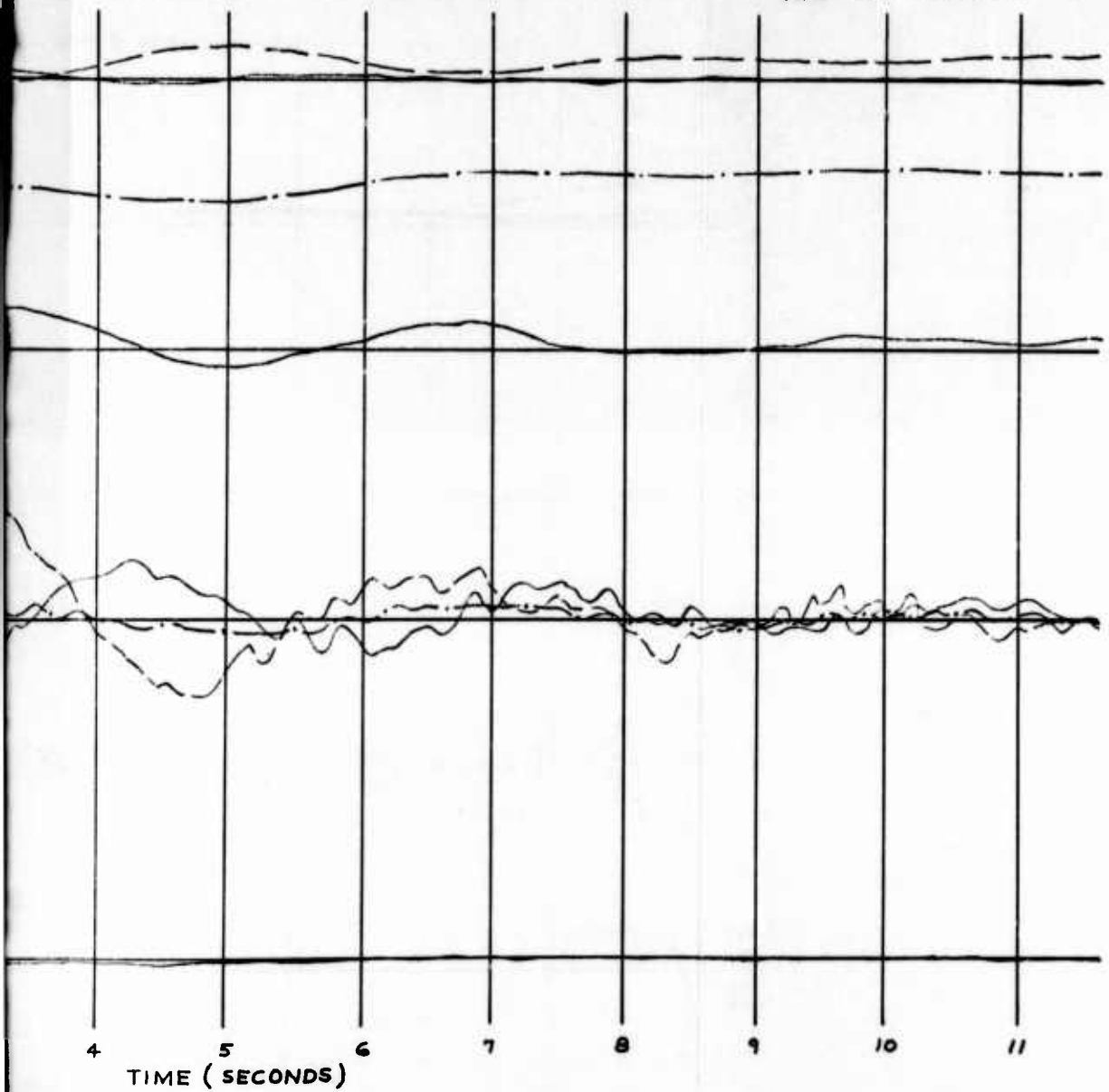


FIGURE 137. RESPONSE TO A RIGHT DIRECTIO

IN 68-10776
OWER PACKAGE

DINAL C.G. LOCATION GE STATION .)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
3.7	312	63	CLIMB

RS CLOSED, NO EXTERNAL STORES.



12

E TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF
T400-CP-400

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDI FUSELAGE (IN
10,075	5,850	18.5	138

NOTE: CARGO DOORS

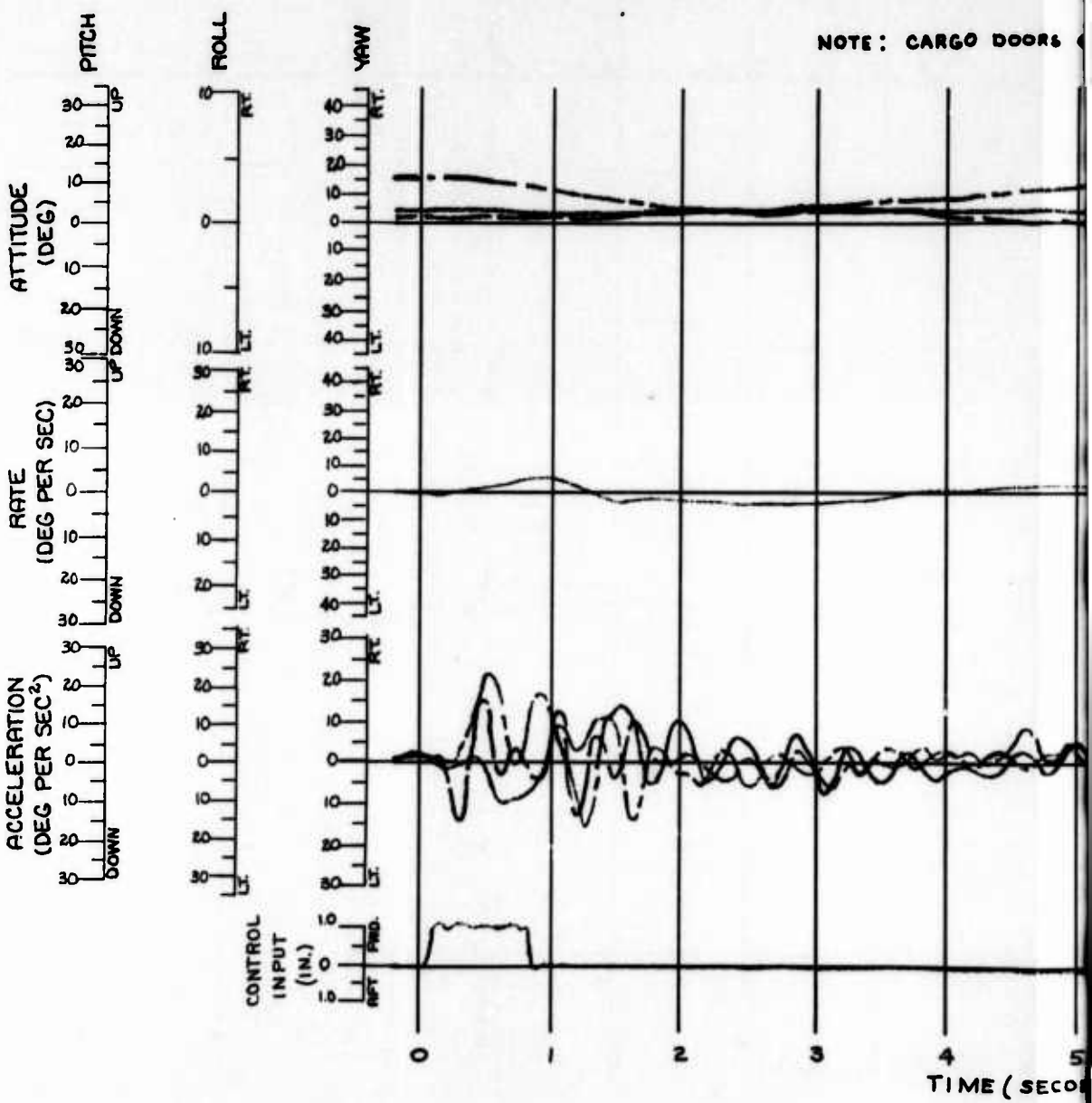
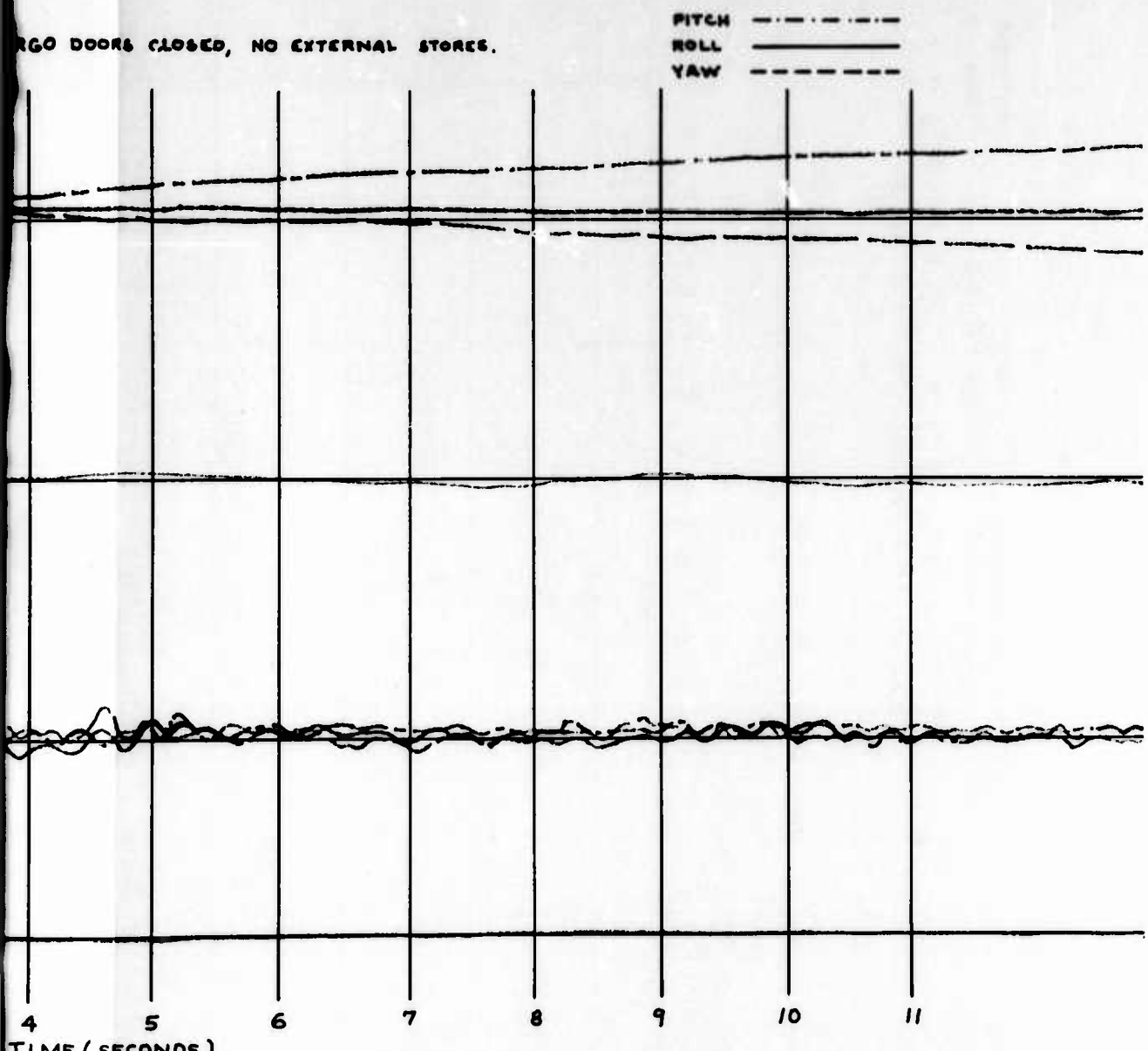


FIGURE 138. RESPONSE TO

UH-1N USAF S/N 68-10776
T00-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	50	LEVEL FLIGHT

RGO DOORS CLOSED, NO EXTERNAL STORES.



RESPONSE TO A FORWARD LONGITUDINAL PULSE

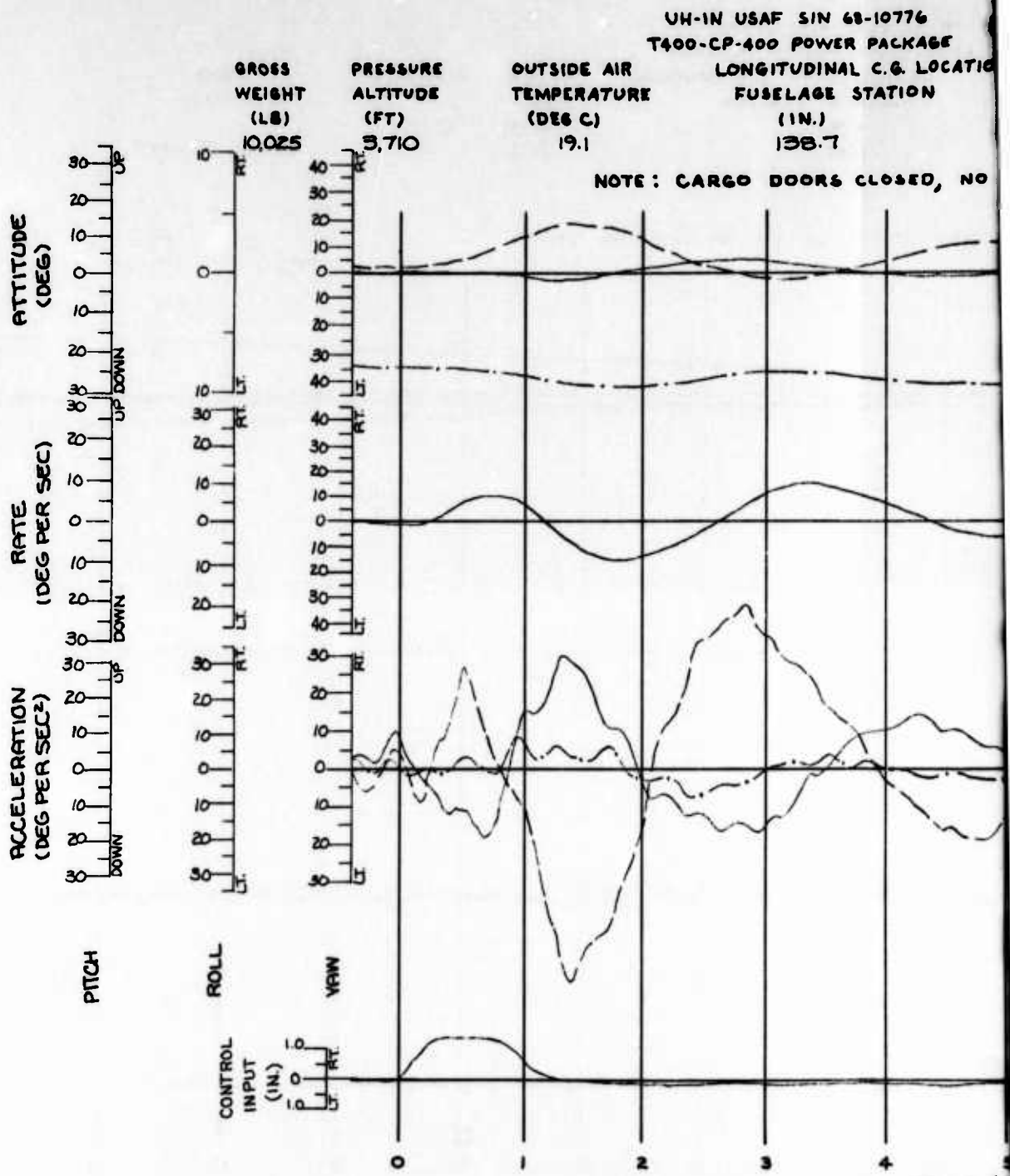


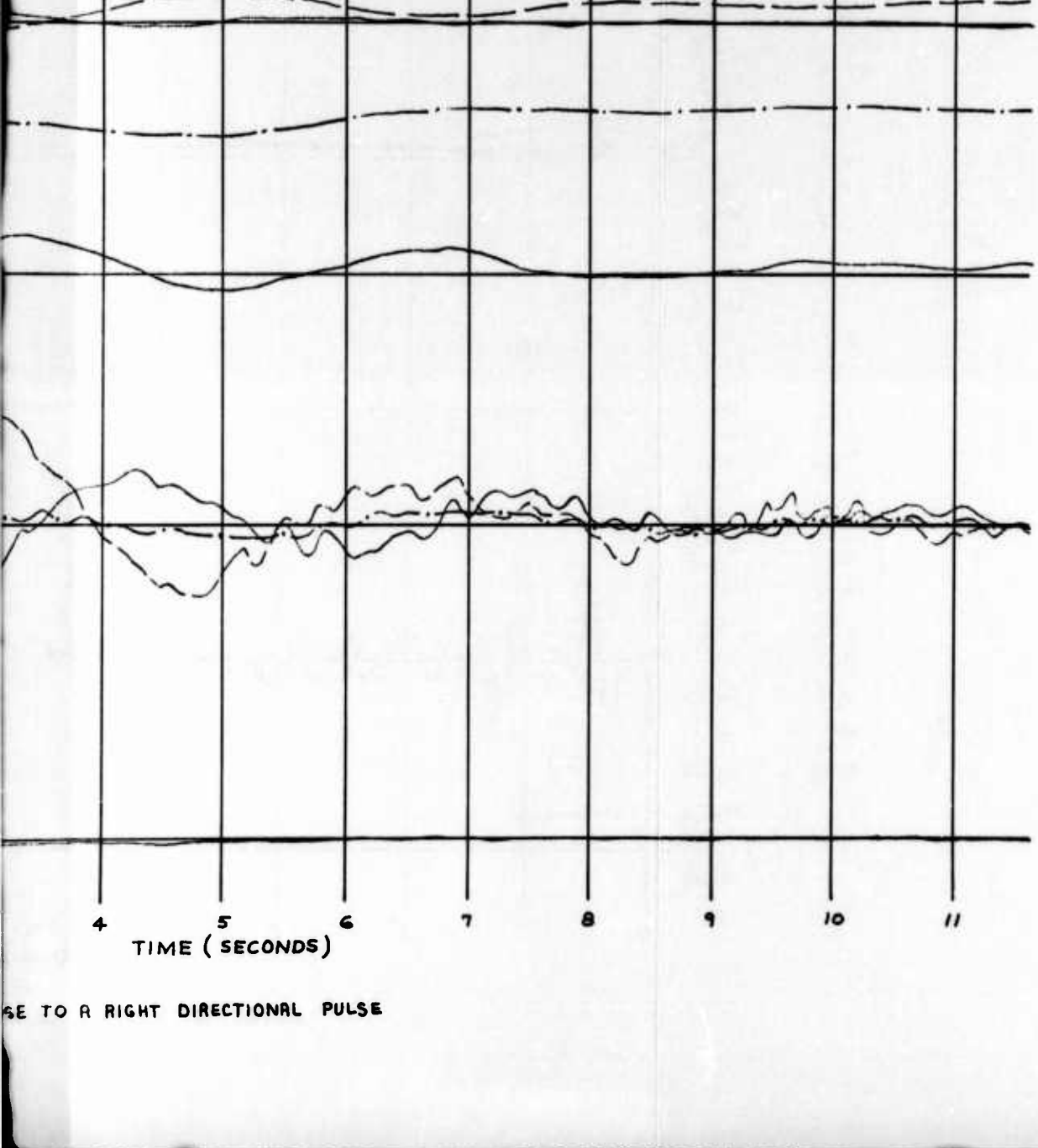
FIGURE 137. RESPONSE TO A RIGHT DIRE

SIN 68-10776
POWER PACKAGE

DINAL C.G. LOCATION AGE STATION N.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
8.7	312	63	CLIMB

ORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—·—
ROLL ————————
YAW - - - - - - -



12

GE TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF
T400-CP-400

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUD FUSELAGE (IN
10,075	5,850	18.5	138

NOTE: CARGO DOORS

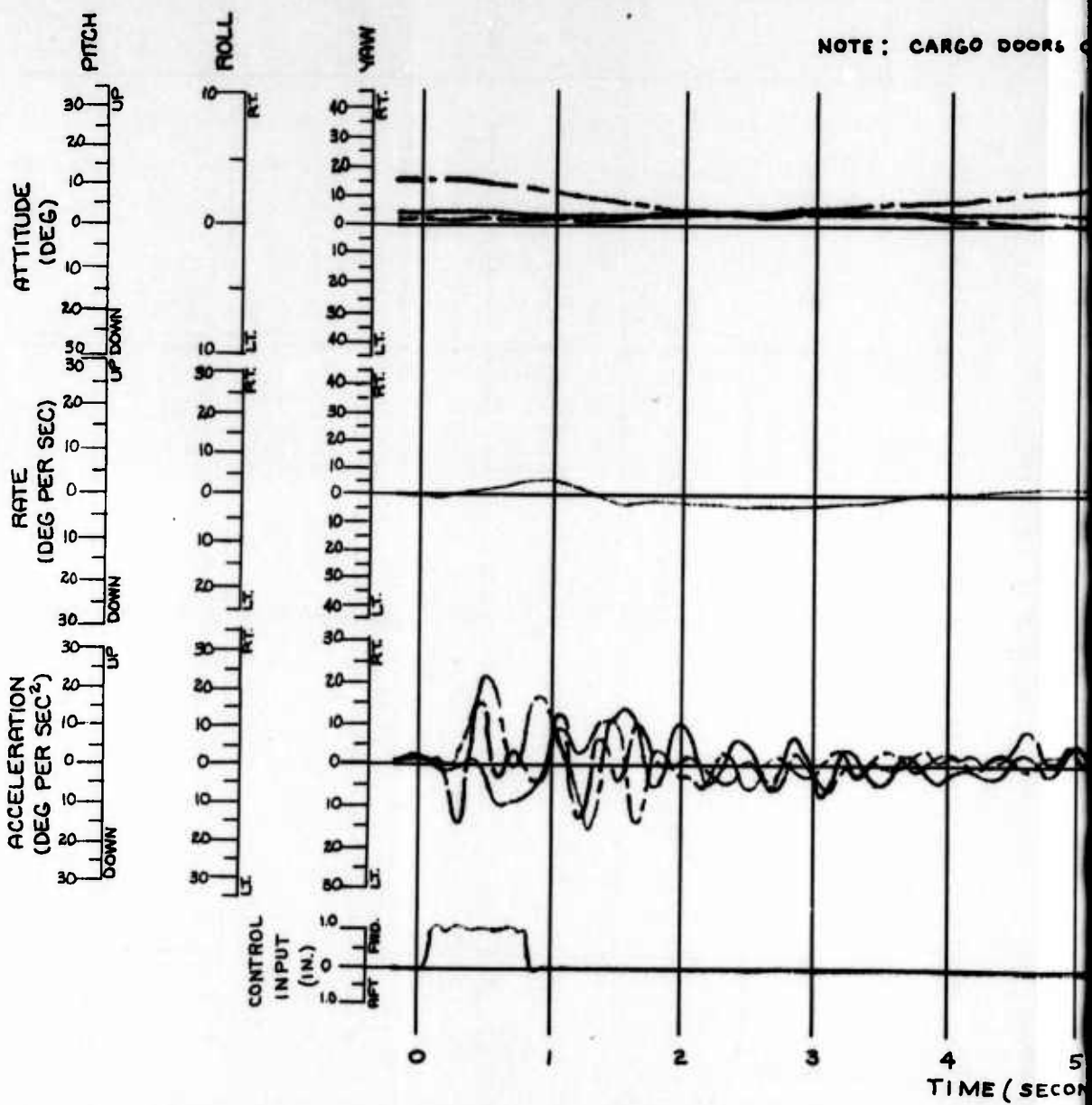
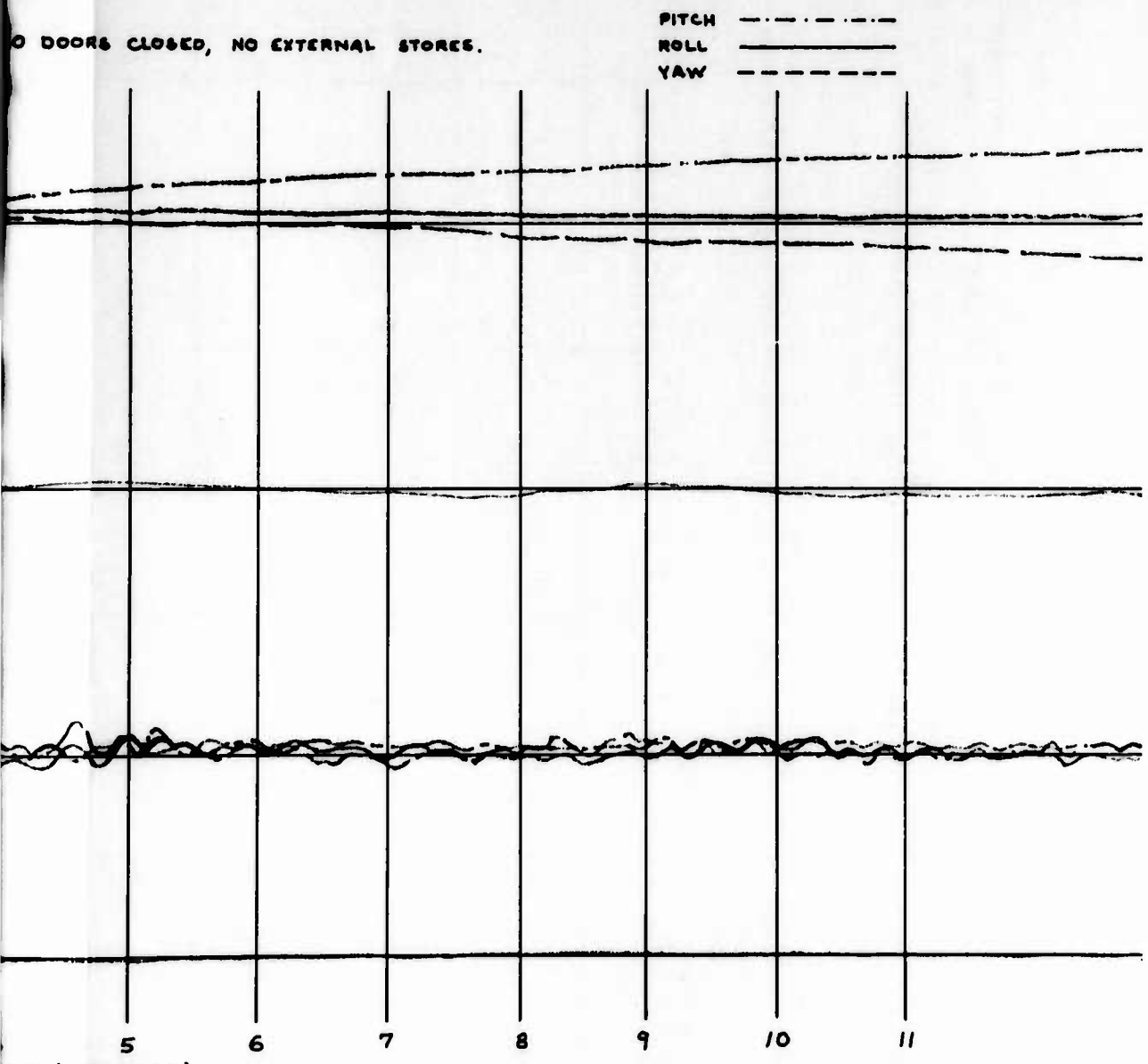


FIGURE 138. RESPONSE TO

-IN USAF S/N 68-10776
-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	50	LEVEL FLIGHT

O DOORS CLOSED, NO EXTERNAL STORES.



ME (SECONDS)

SPONSE TO A FORWARD LONGITUDINAL PULSE

UH-IN USAF S/
T400-CP-400 POW

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL FUSELAGE STA (IN.)
10,075	3,850	18.5	158.7

NOTE: CARGO DOORS CLOSED, NO

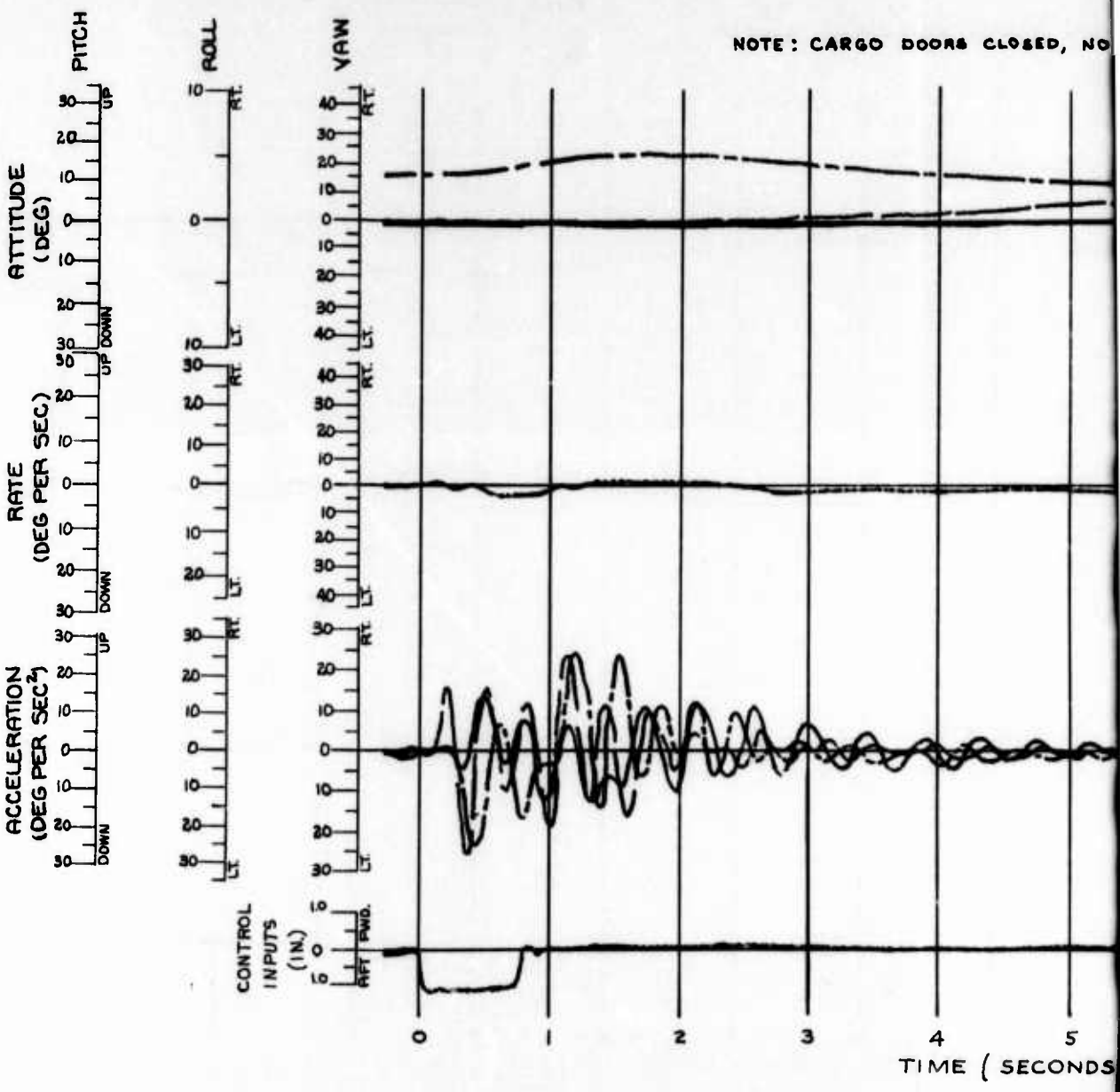


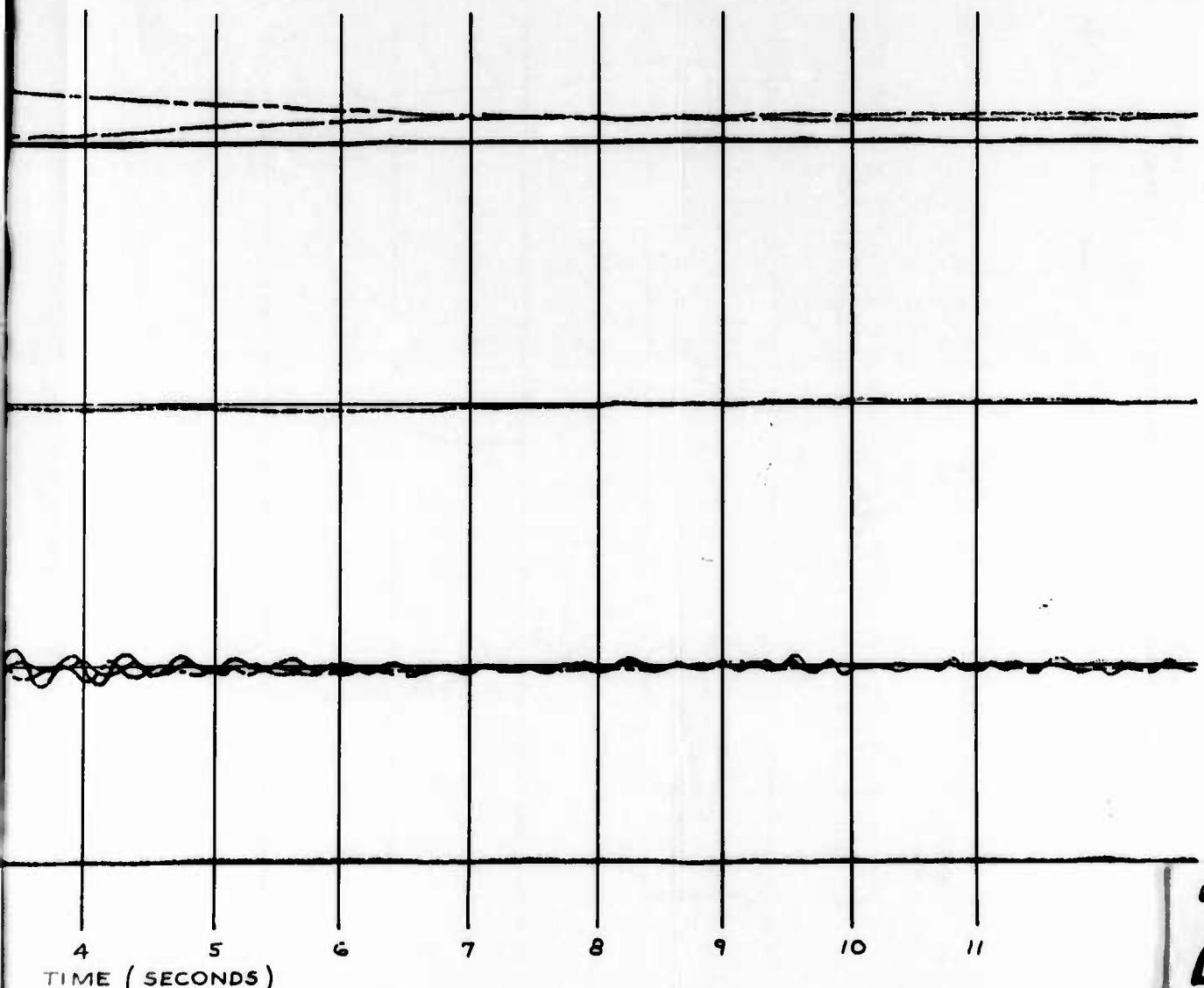
FIGURE 139. RESPONSE TO AN

UH-1N USAF S/N 68-10766
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	50	LEVEL FLIGHT

PITCH — · — · — · —
ROLL ————————
YAW — — — — — —

D DOORS CLOSED, NO EXTERNAL STORES.



2

9. RESPONSE TO AN AFT LONGITUDINAL PULSE

UH-1N USAF S/N 68-
T400-CP-400 POWER

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. FUSELAGE STATION (IN.)
10,075	3,850	18.5	138.7

NOTE: CARGO DOORS CLOSED, NO EXTE

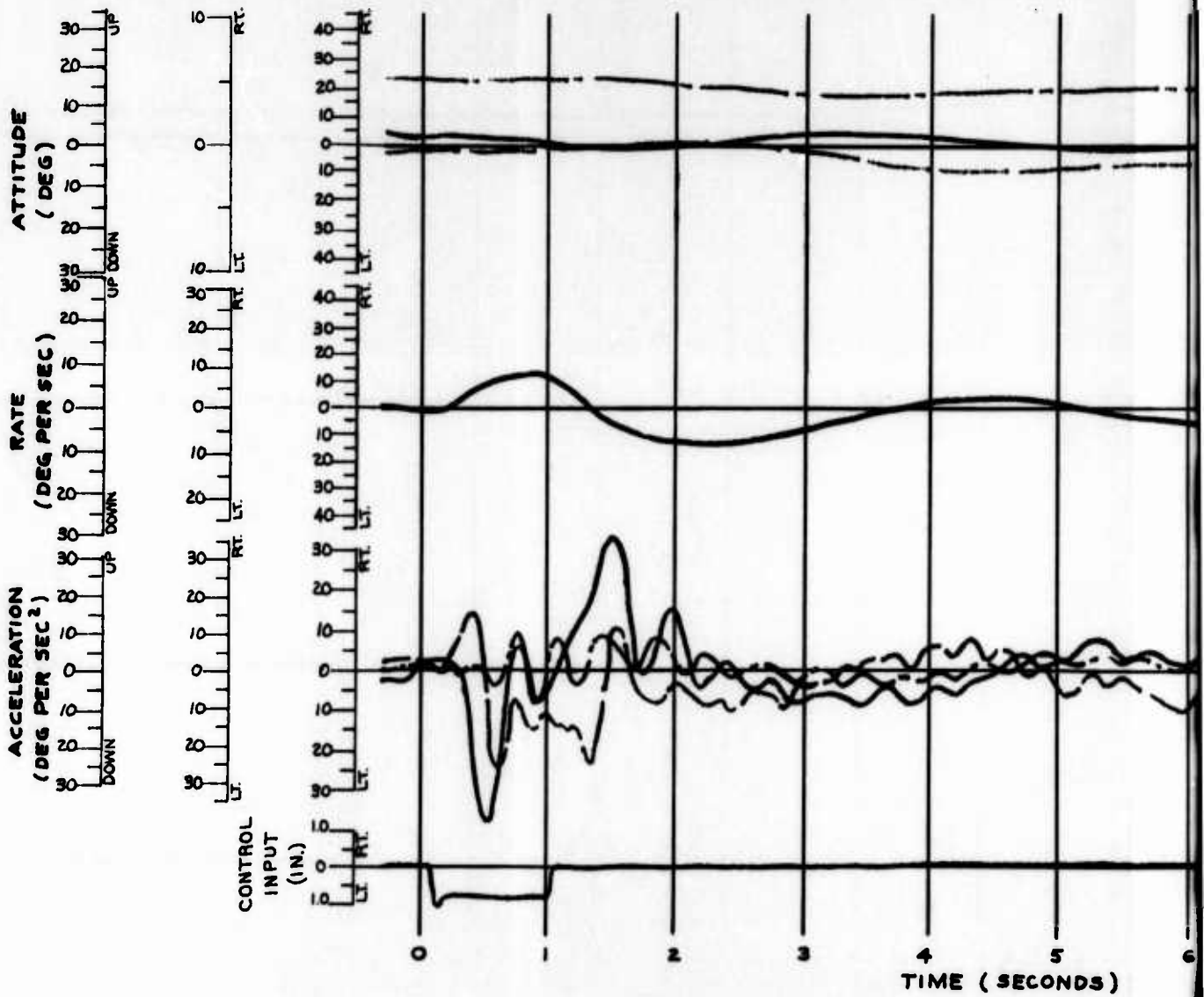


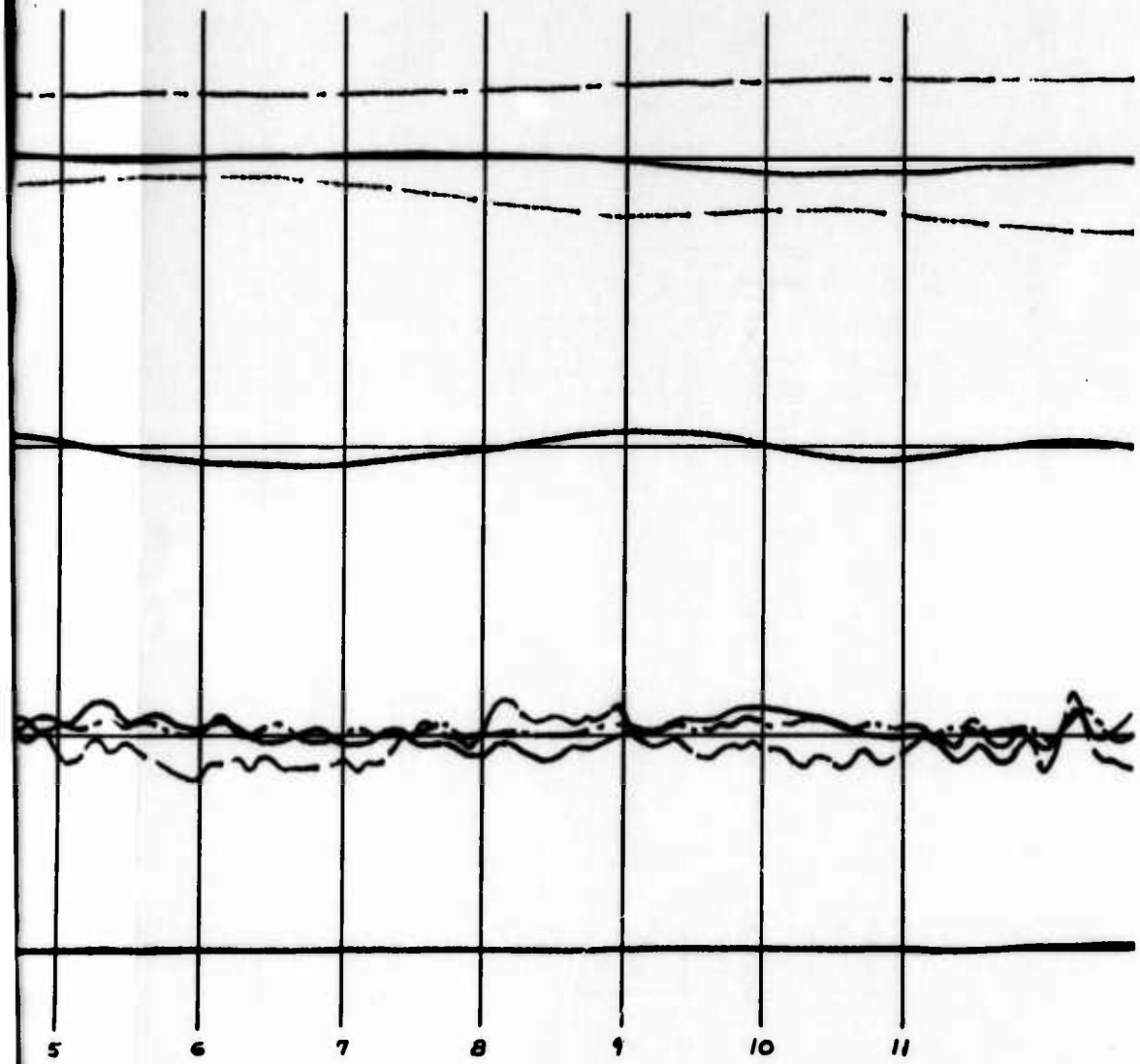
FIGURE 140. RESPONSE TO A LEFT LATERAL PULSE

USAF S/N 68-10776
400 POWER PACKAGE

TUDINAL C.G. LOCATION LAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	50	LEVEL FLIGHT

LOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW — — — — —



CONDS)

ERAL PULSE

UH-
T400
LO
F

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO

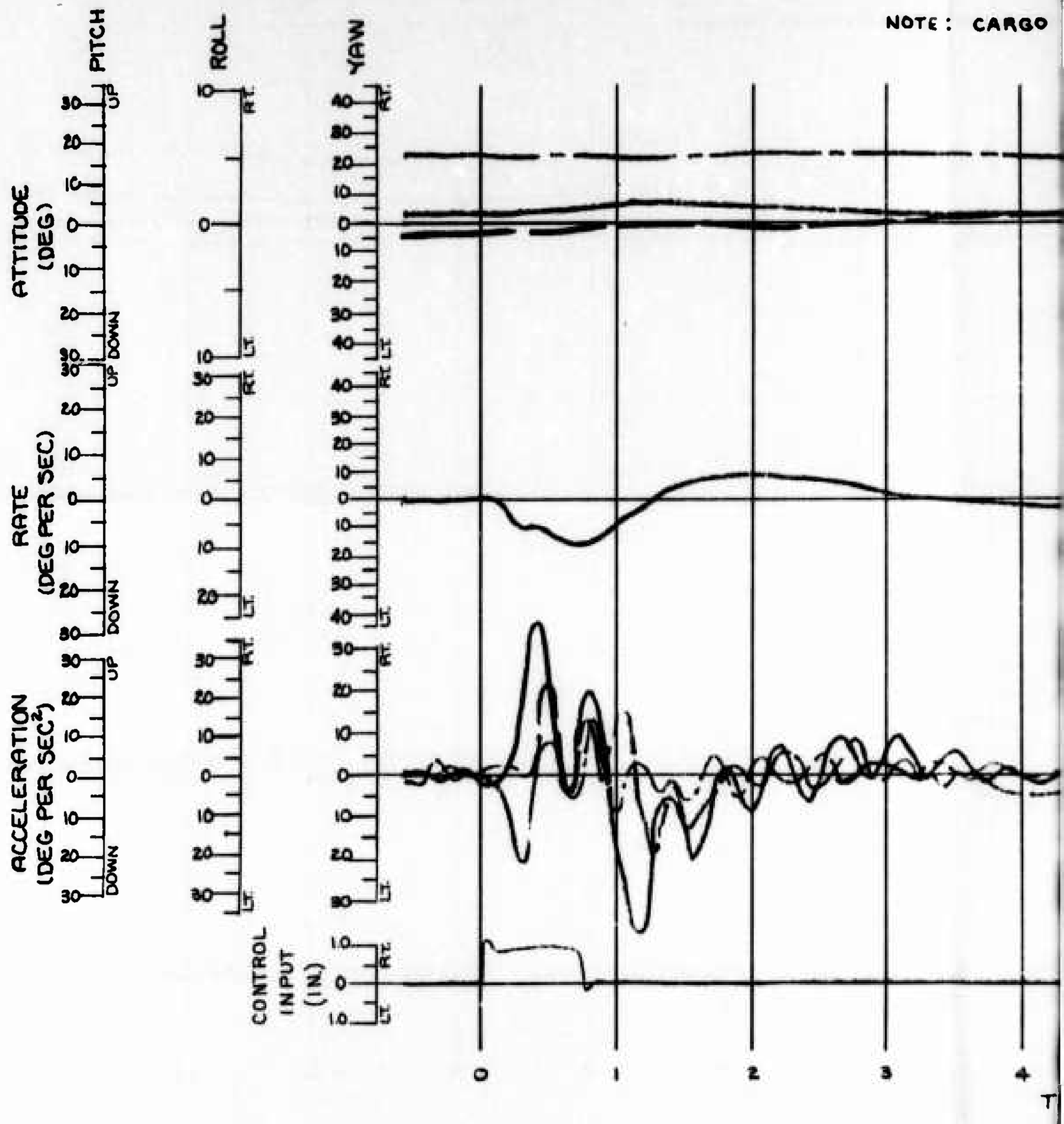


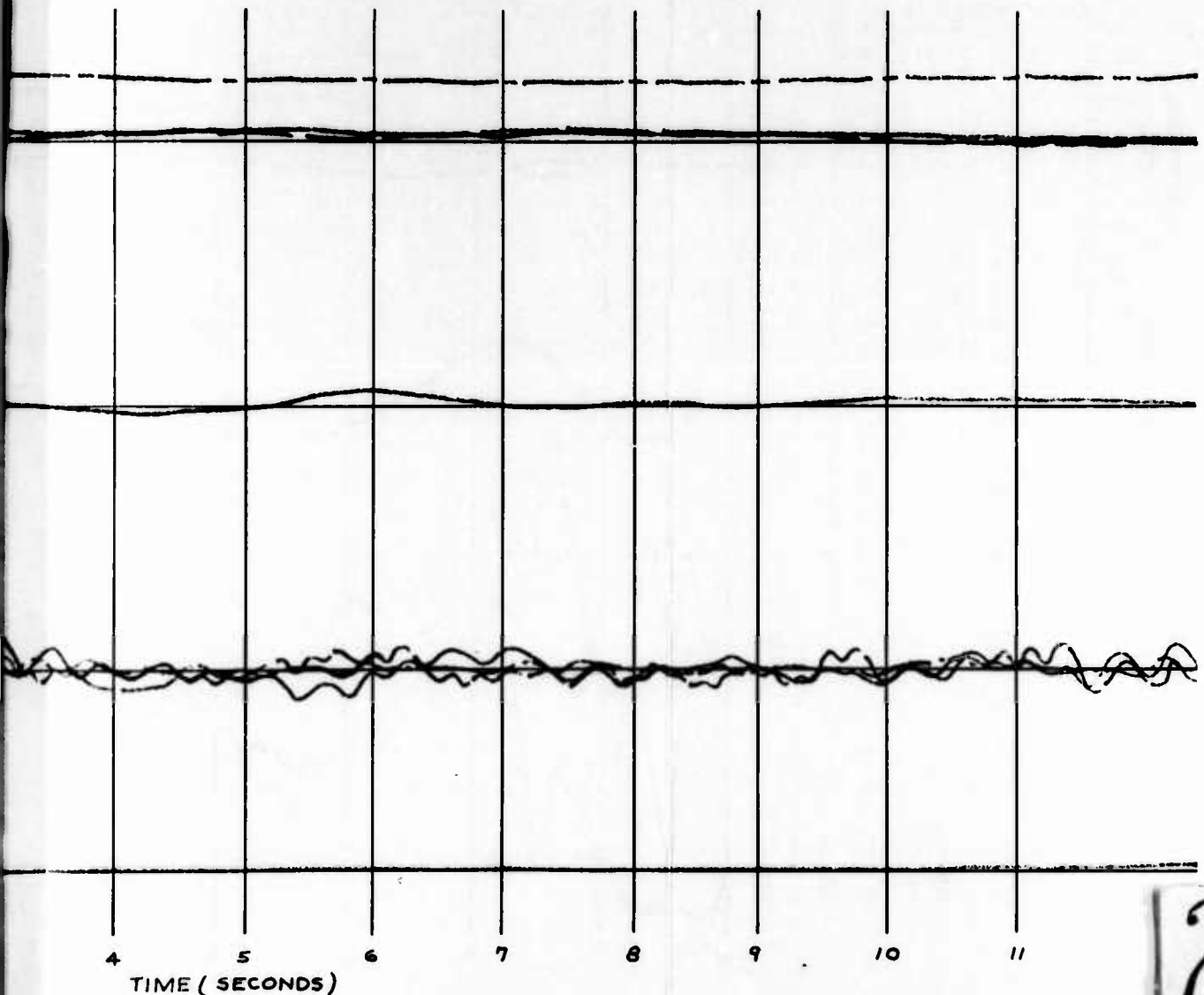
FIGURE 141. RESPONSE TO A RIGHT

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
)	138.7	313	50	LEVEL FLIGHT

TE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW — — — — —



2

TO R RIGHT LATERAL PULSE

UH-1N USAF S/N 68-1
T400-CP-400 POWER PA
LONGITUDINAL C.G
FUSELAGE STATI
(IN.)
138.7

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS CLOSED, N

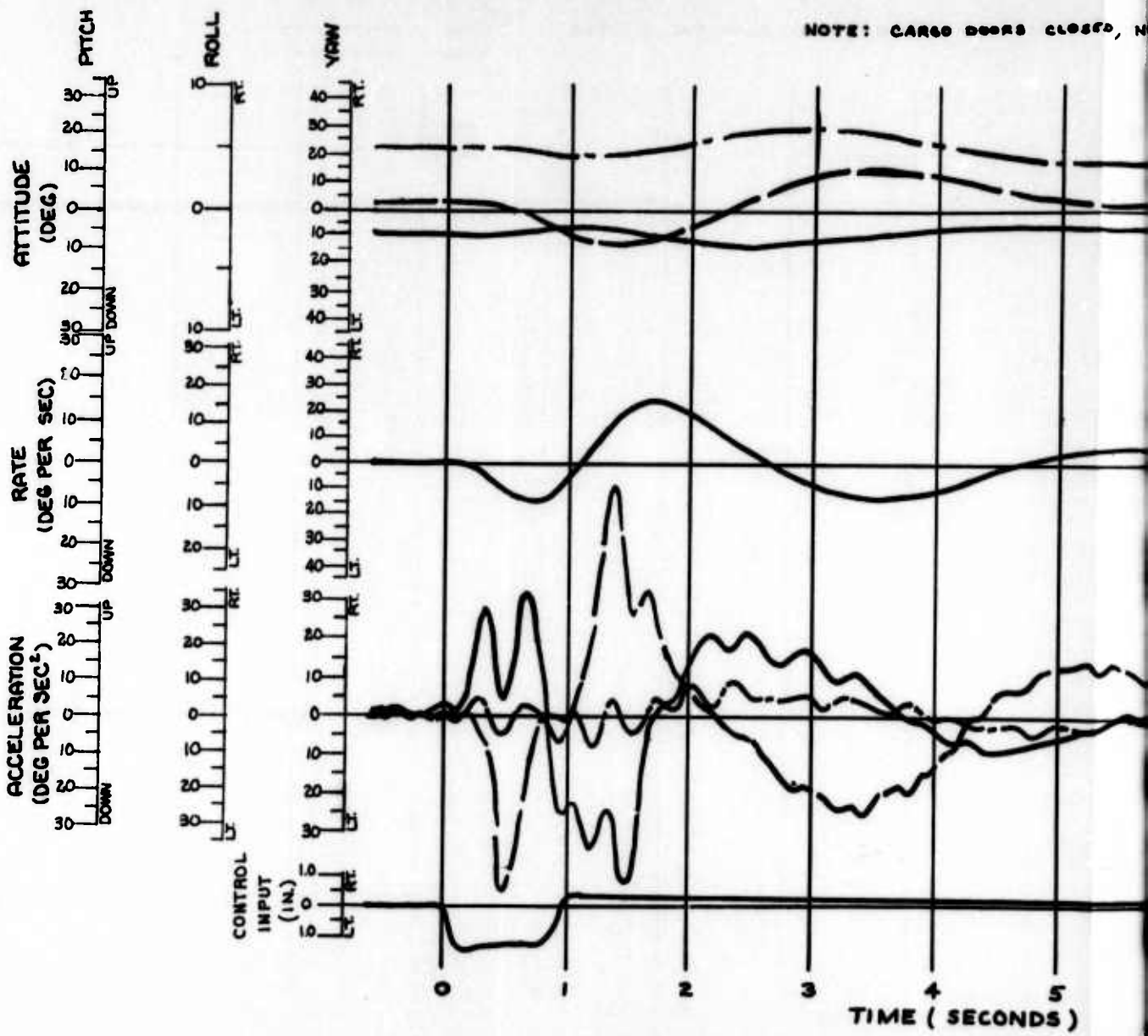


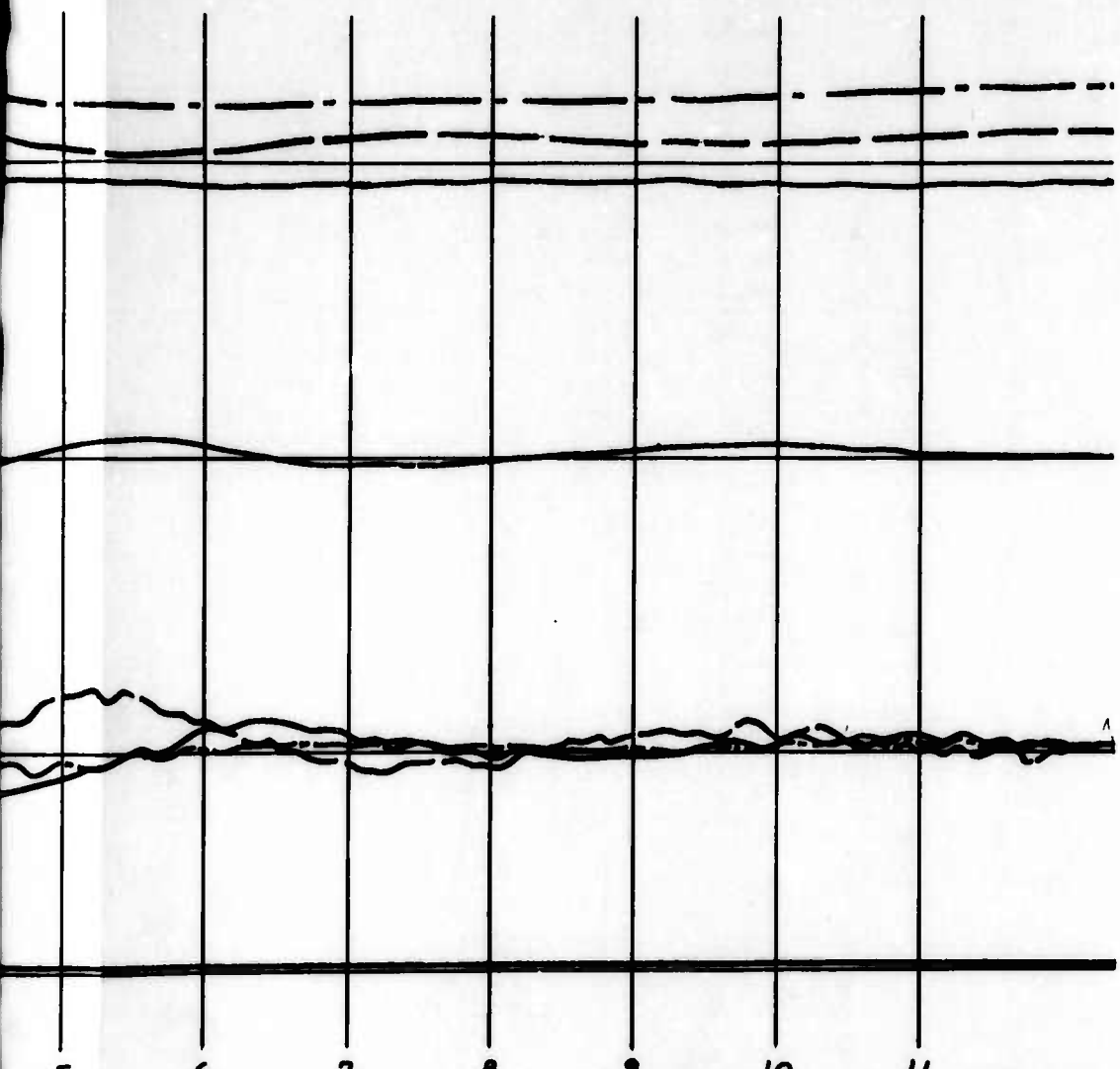
FIGURE 142. RESPONSE TO A LEFT DIRECTIONAL PU

F S/N 68-10776
POWER PACKAGE

UDINAL C.G. LOCATION AGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	50	LEVEL FLIGHT

CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—·—
ROLL ————————
YAW — — — — —



5 6 7 8 9 10 11

NDS)

ECTIONAL PULSE

UH-1N
T400-CP-
LONG
FUSE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS

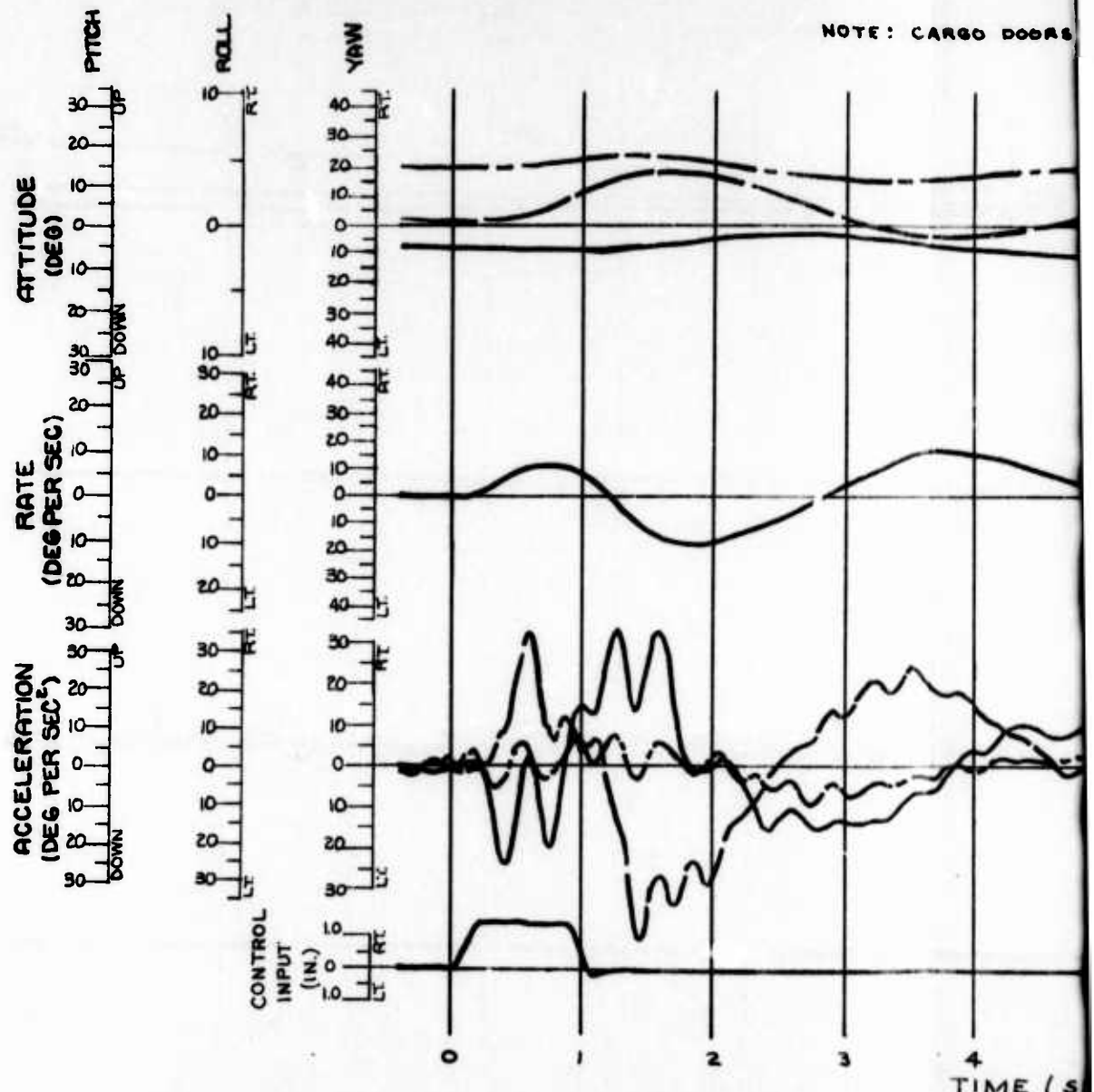


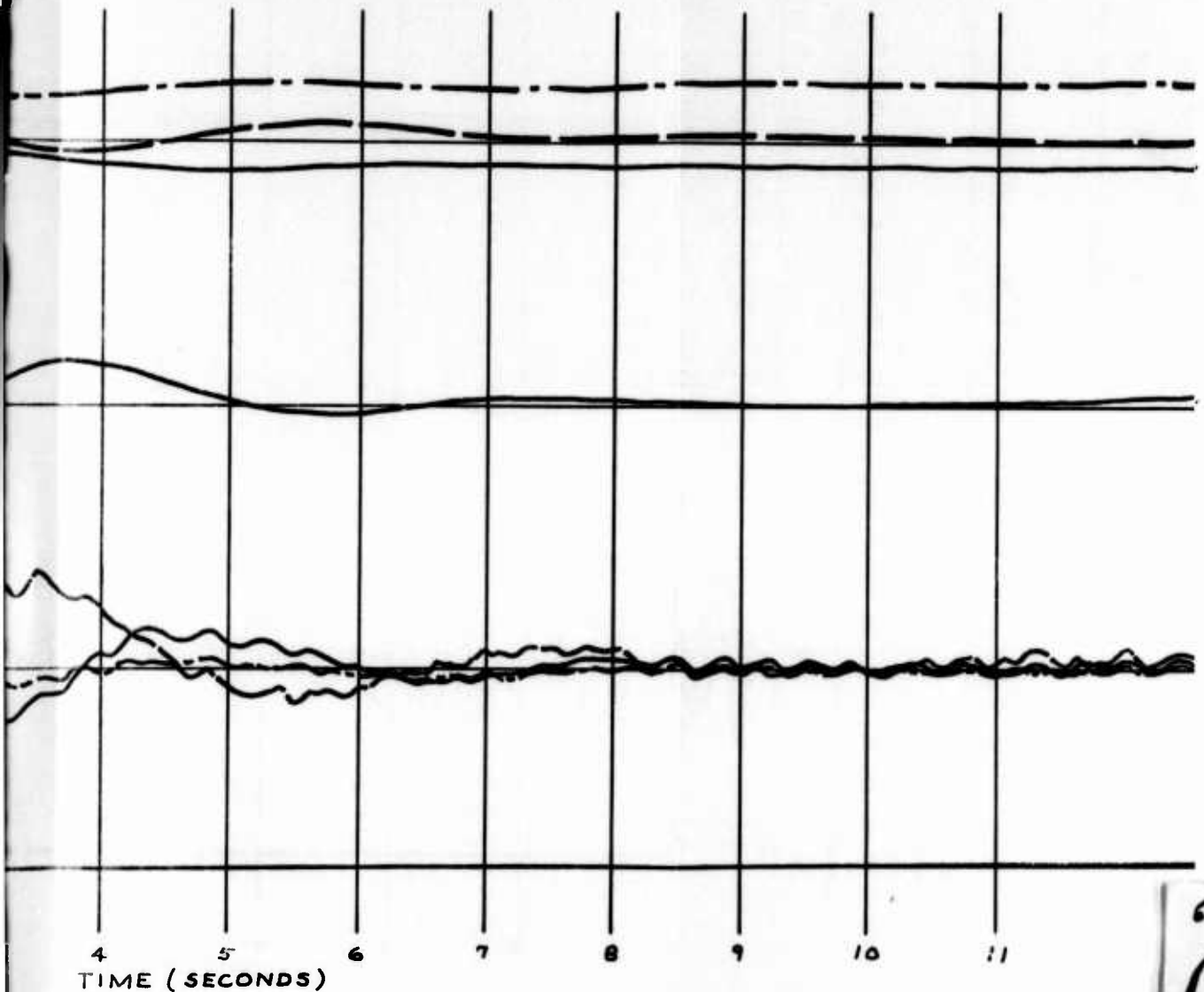
FIGURE 143. RESPONSE TO A RIGHT DIR

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR ATURE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	50	LEVEL FLIGHT

CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW – – – – –



12

E TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF S/N 68
T400-CP-400 POWE
LONGITUDINAL C.
FUSELAGE STATIC
(IN.)
138.7

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS CLOSED, NO EXTERNAL

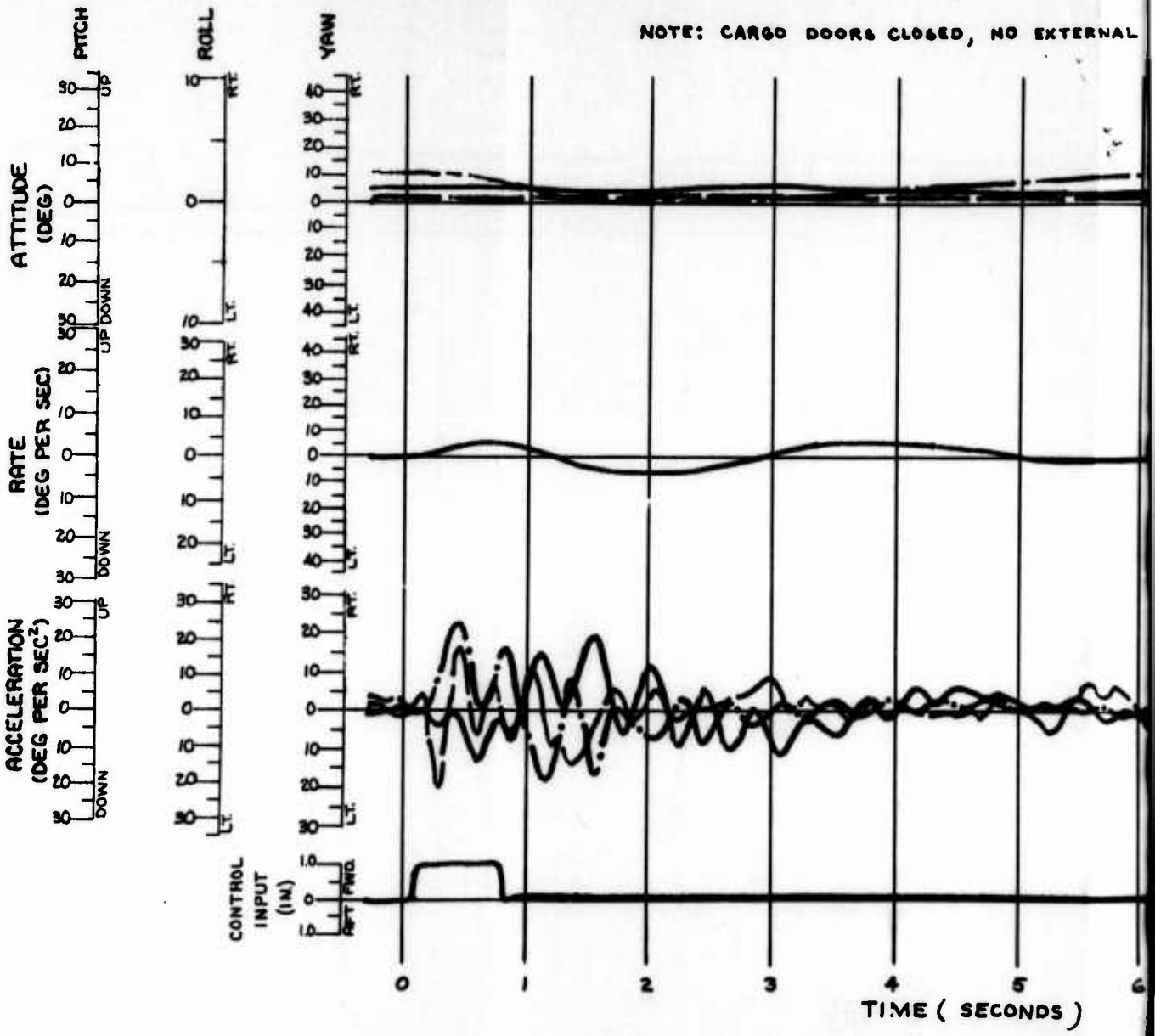


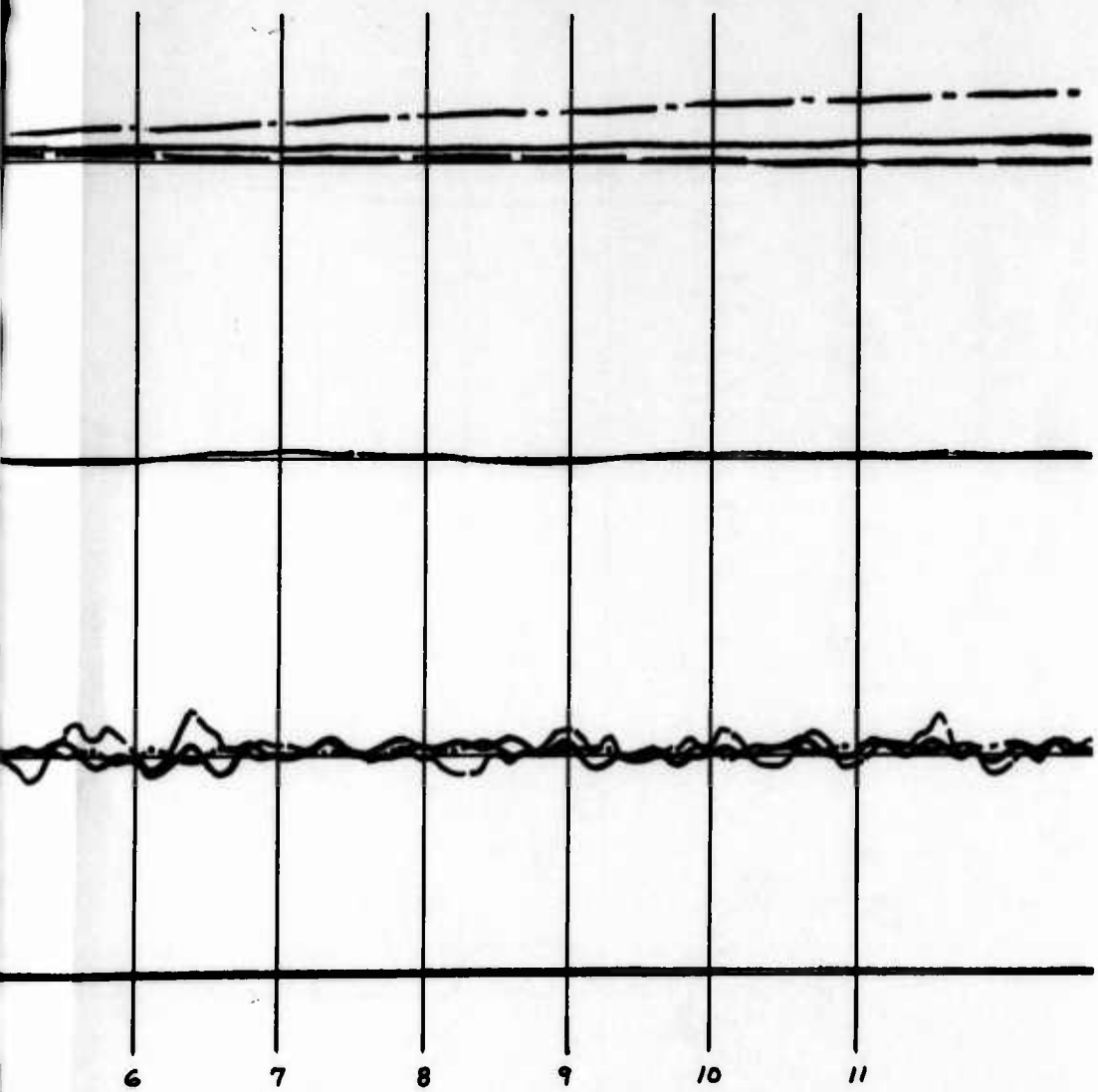
FIGURE 144. RESPONSE TO A FORWARD LONGITUDINA

AF S/N 68-10776
O POWER PACKAGE

DINAL C.G. LOCATION BE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
38.7	313	85	LEVEL FLIGHT

EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW – – – – – –



IDS)

ONGITUDINAL PULSE

UH-1
T400-
LO

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOOR

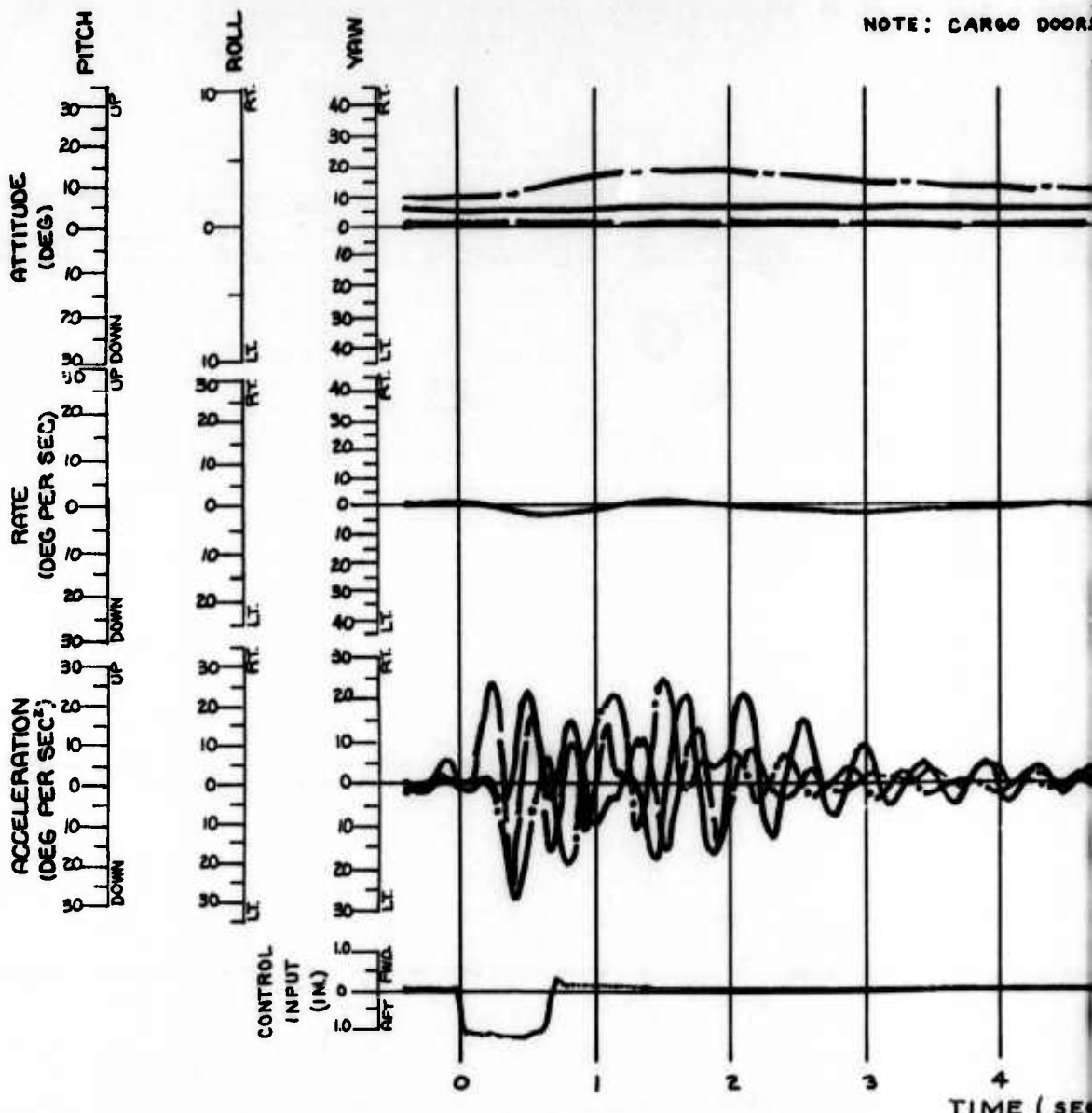


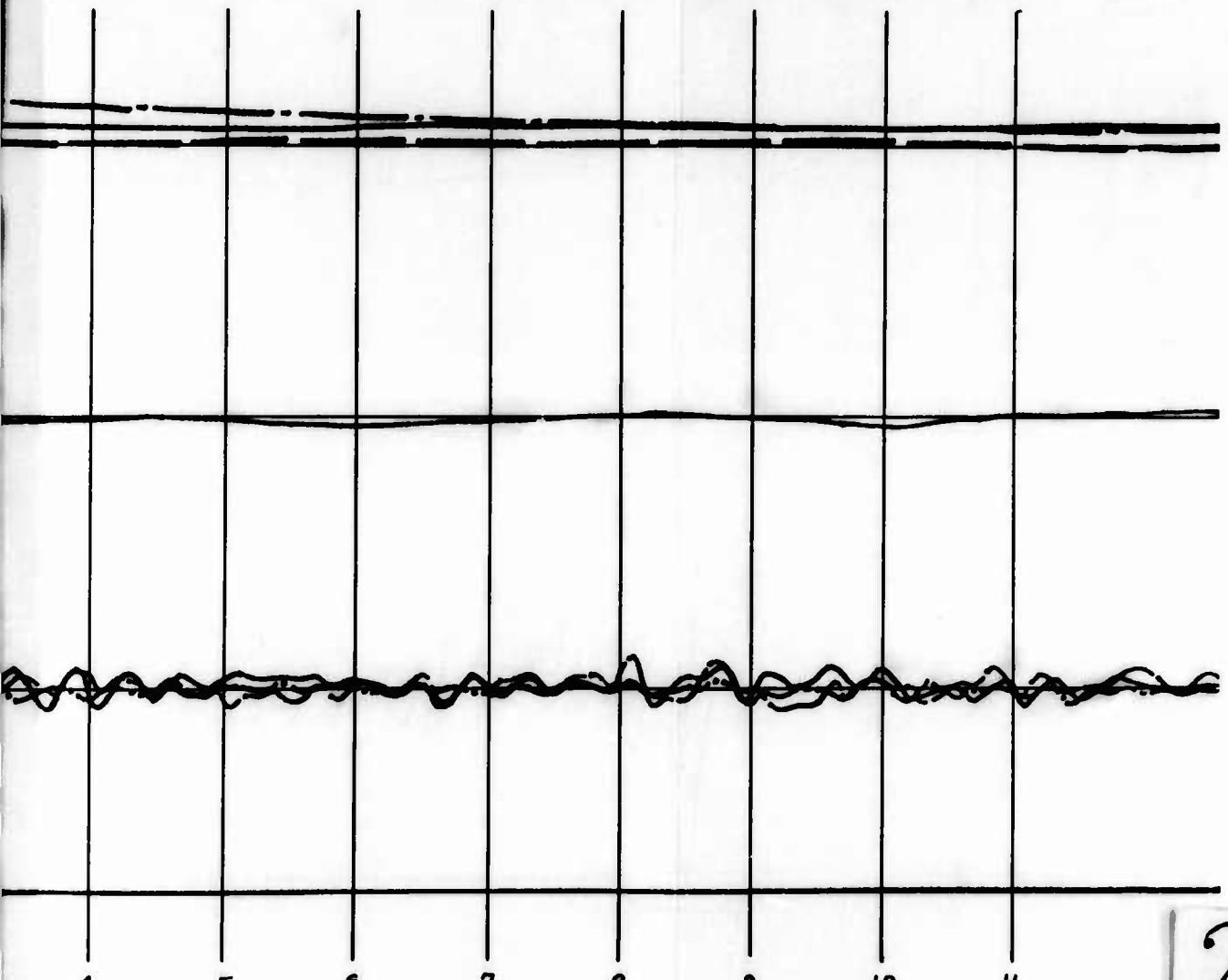
FIGURE 145. RESPONSE TO AN AFT L

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	85	LEVEL FLIGHT

: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW – – – – – –



2

TO AN AFT LONGITUDINAL PULSE

UH-1N USAF
T400-CP-400 P
LONGITUDINAL
FUSELAGE
(IN.)
138.7

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS CLOSED,

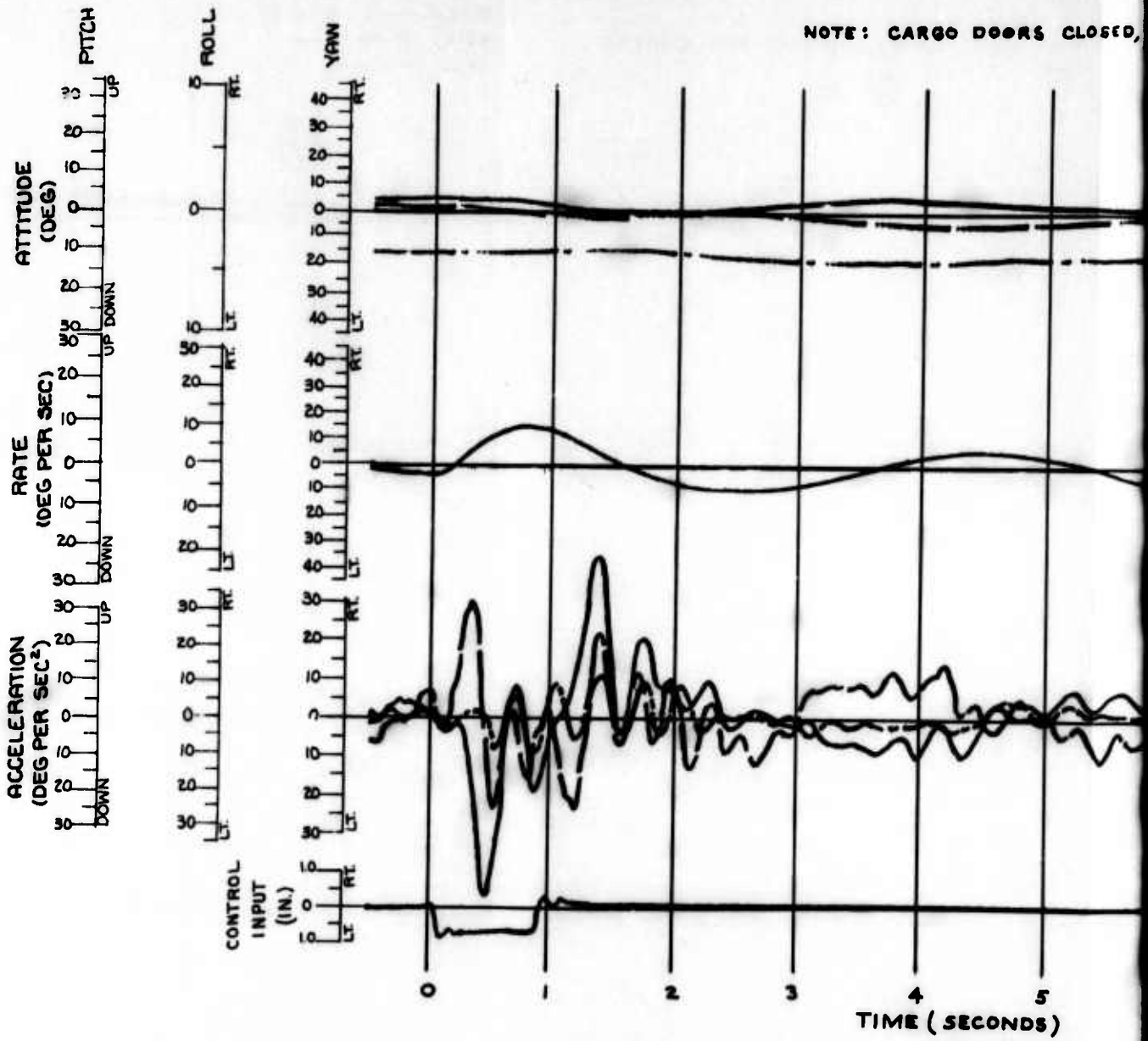


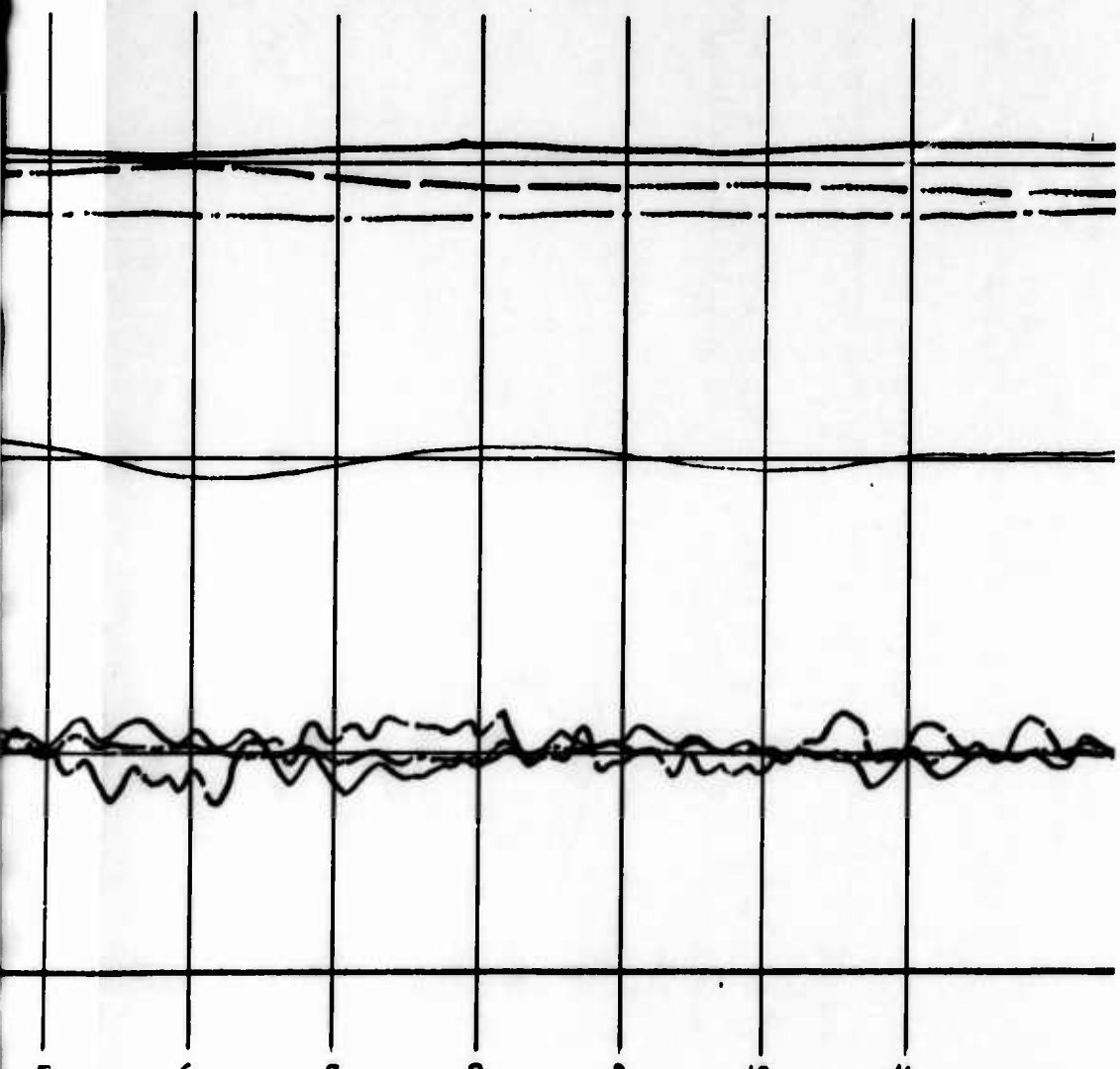
FIGURE 146. RESPONSE TO A LEFT LATERAL PULSE

IN USAF S/N 68-10776
CP-400 POWER PACKAGE

GITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	85	LEVEL FLIGHT

S CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—·—
ROLL ————————
YAW — — — — —



NDS)

ERAL PULSE

UH-1N USA
T400-CP-400
LONGITU
FUSEL

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS

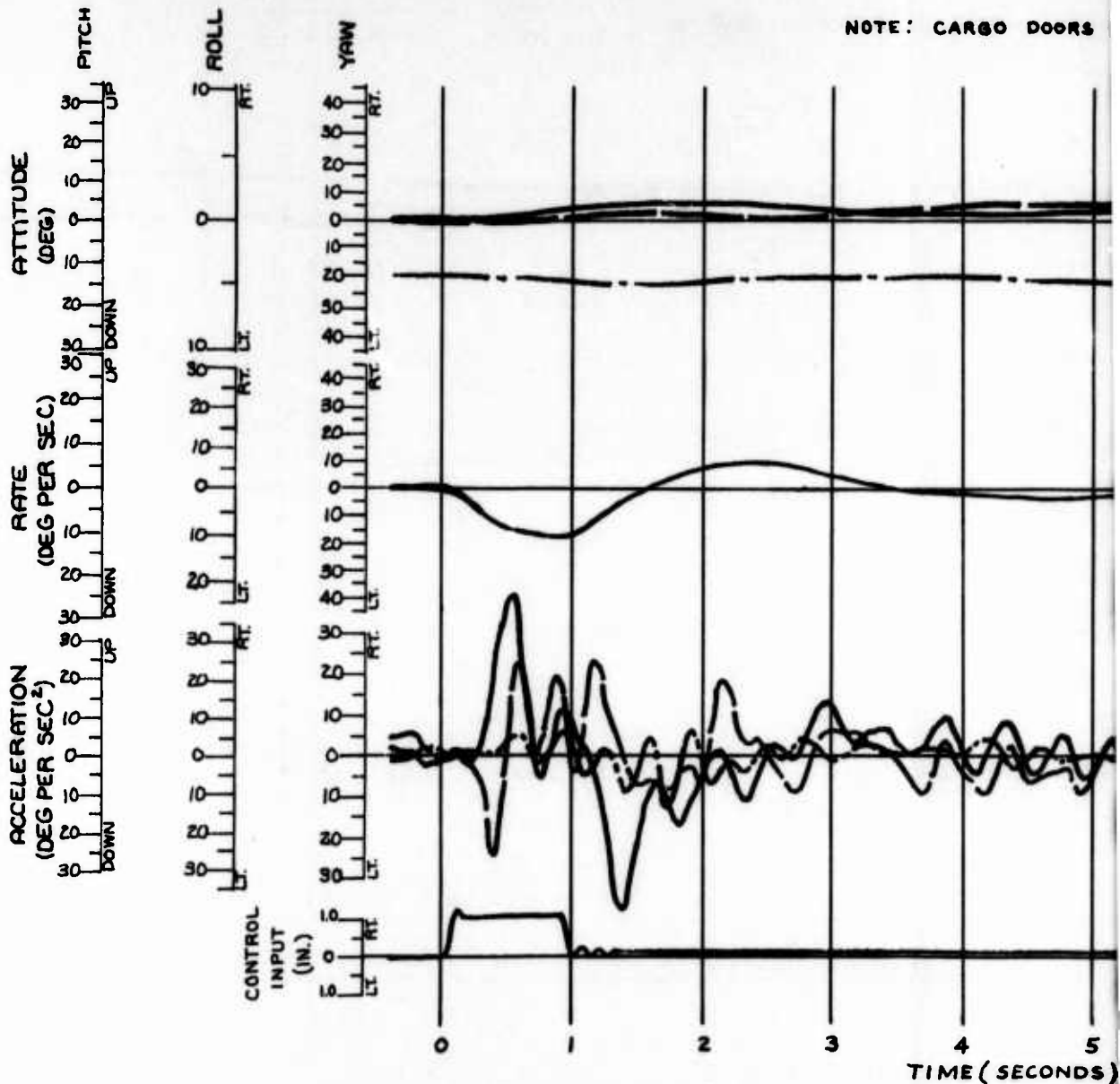


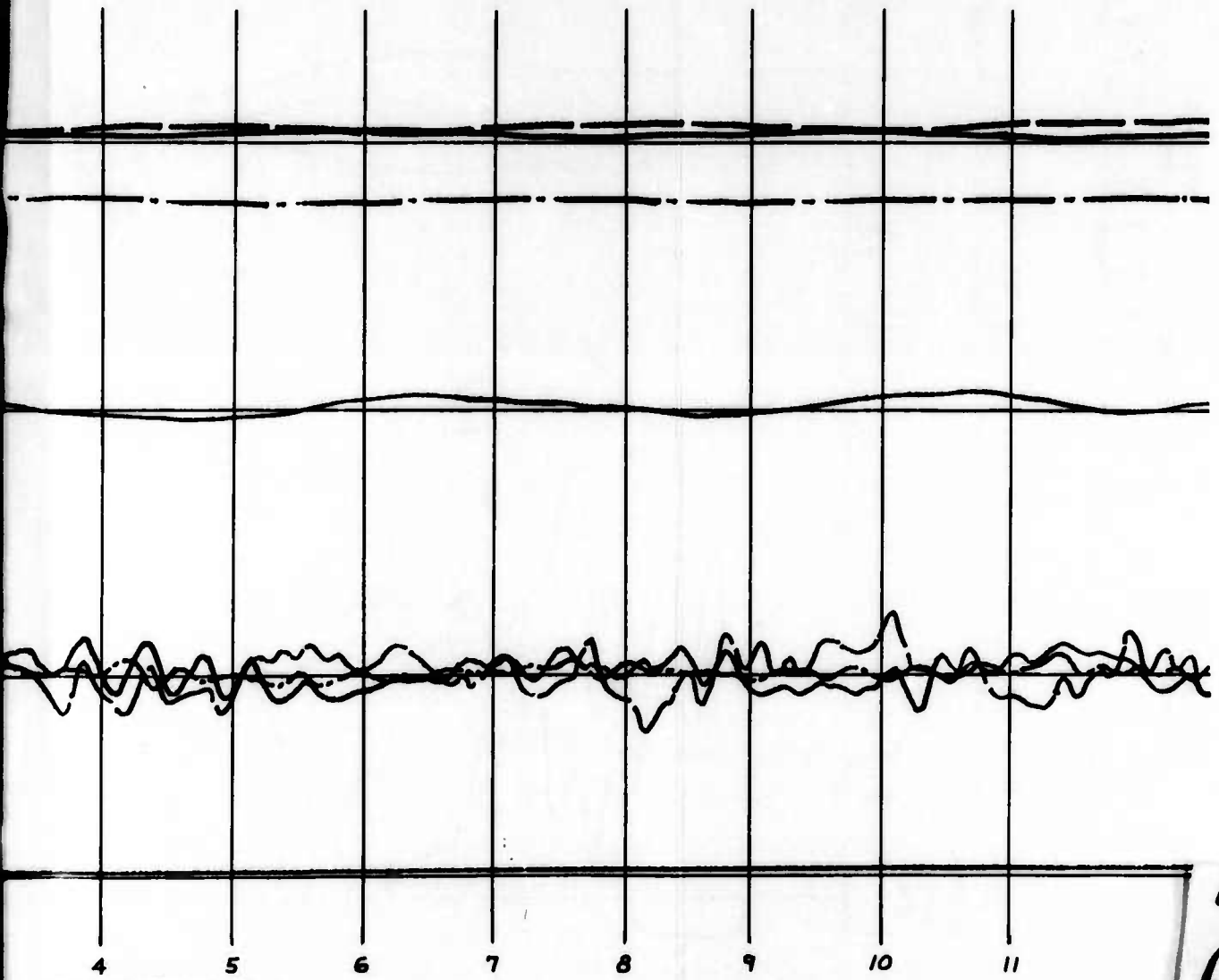
FIGURE 147. RESPONSE TO A RIGHT LATERAL

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

IR TURE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	85	LEVEL FLIGHT

TE: CARGO DOORS CLOSED, NO EXTERNAL STORAGE.

PITCH — · — · — · —
ROLL ————————
YAW — — — — —



2

E TO A RIGHT LATERAL PULSE

UH-1N USAF S/N 68-
T400-CP-400 POWER P

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL FUSELAGE STA (IN)
10,075	3,850	18.5	138.7

NOTE: CARGO DOORS CLOSED, NO EX

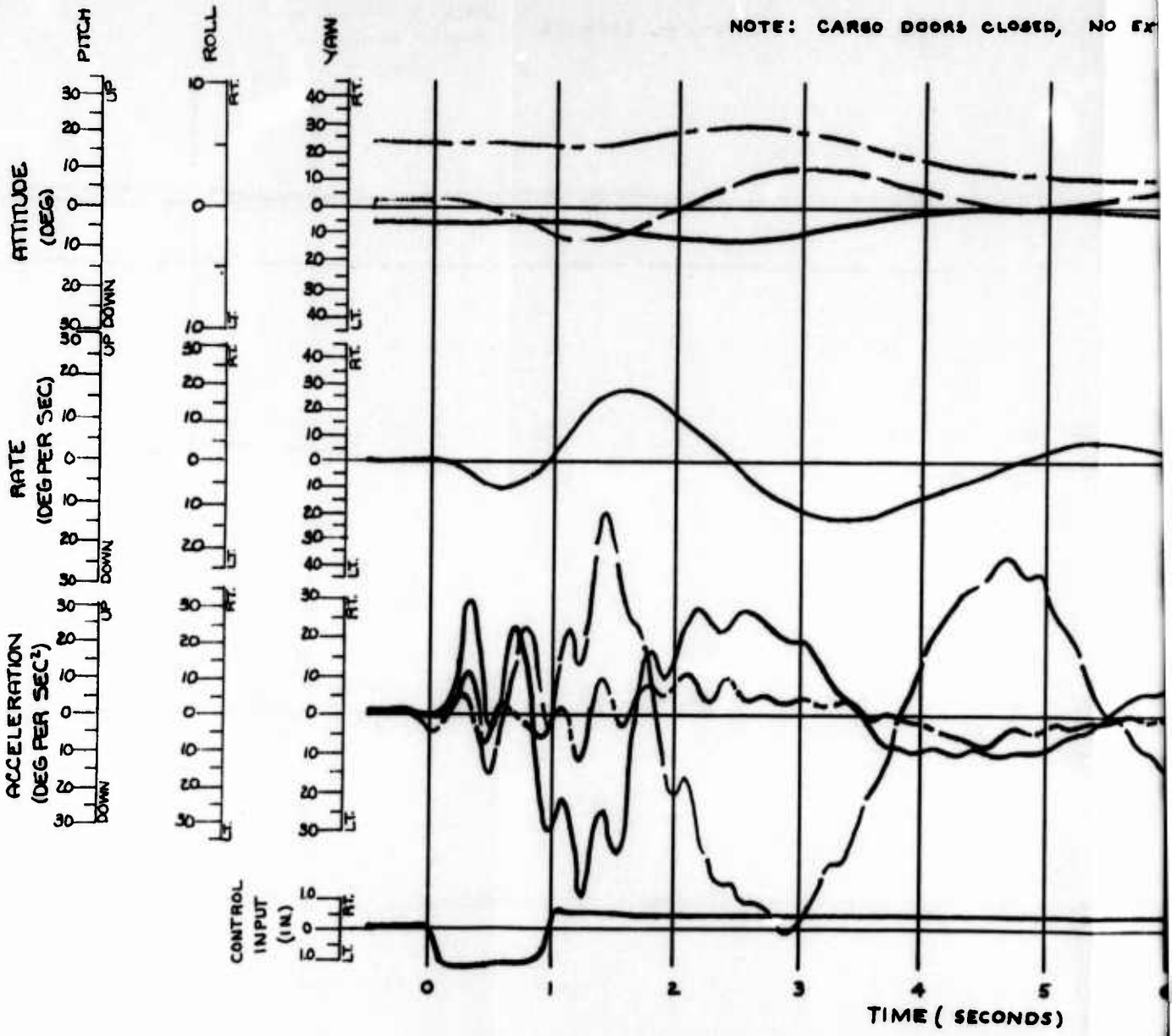


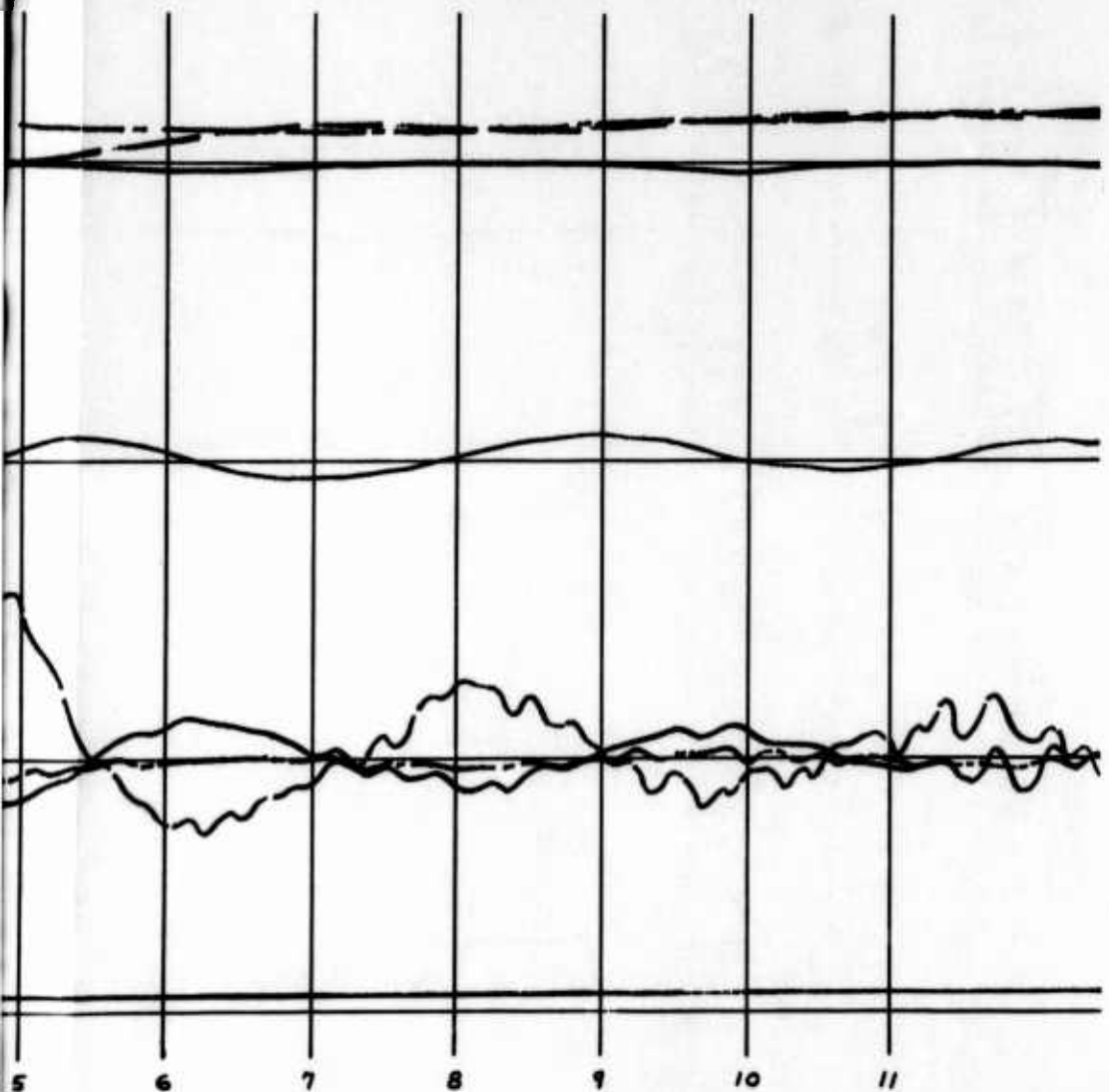
FIGURE 148. RESPONSE TO A LEFT DIRECTIONAL PULSE

S/N 68-10776
POWER PACKAGE

ITUDINAL C.G. LOCATION LAGE STATION (IN)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	85	LEVEL FLIGHT

PITCH — · — · — · — · —
ROLL ————————
YAW — — — — — — —

D, NO EXTERNAL STORES.



)S)

IONAL PULSE

UH-IN
T400-CE

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOO

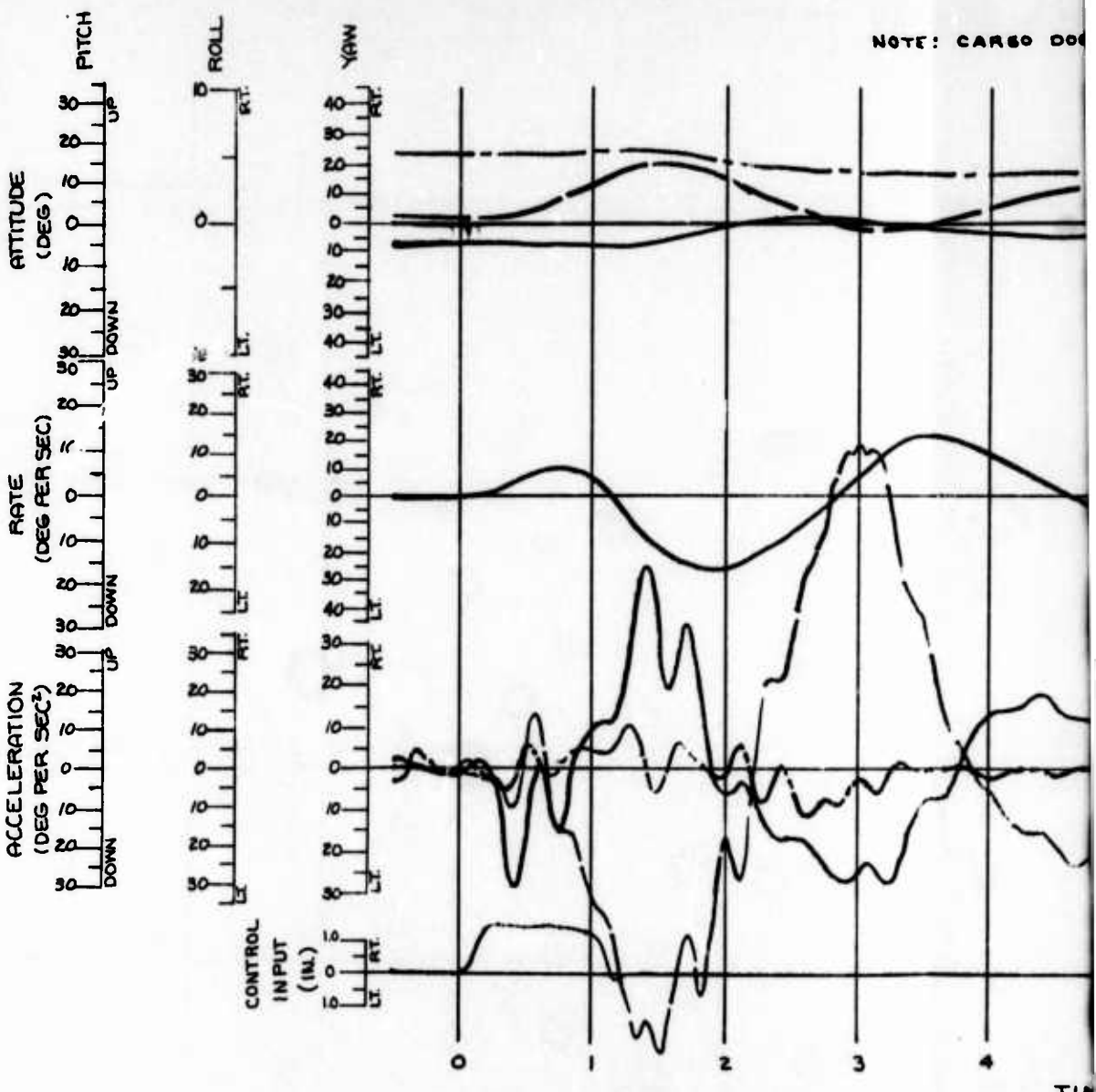


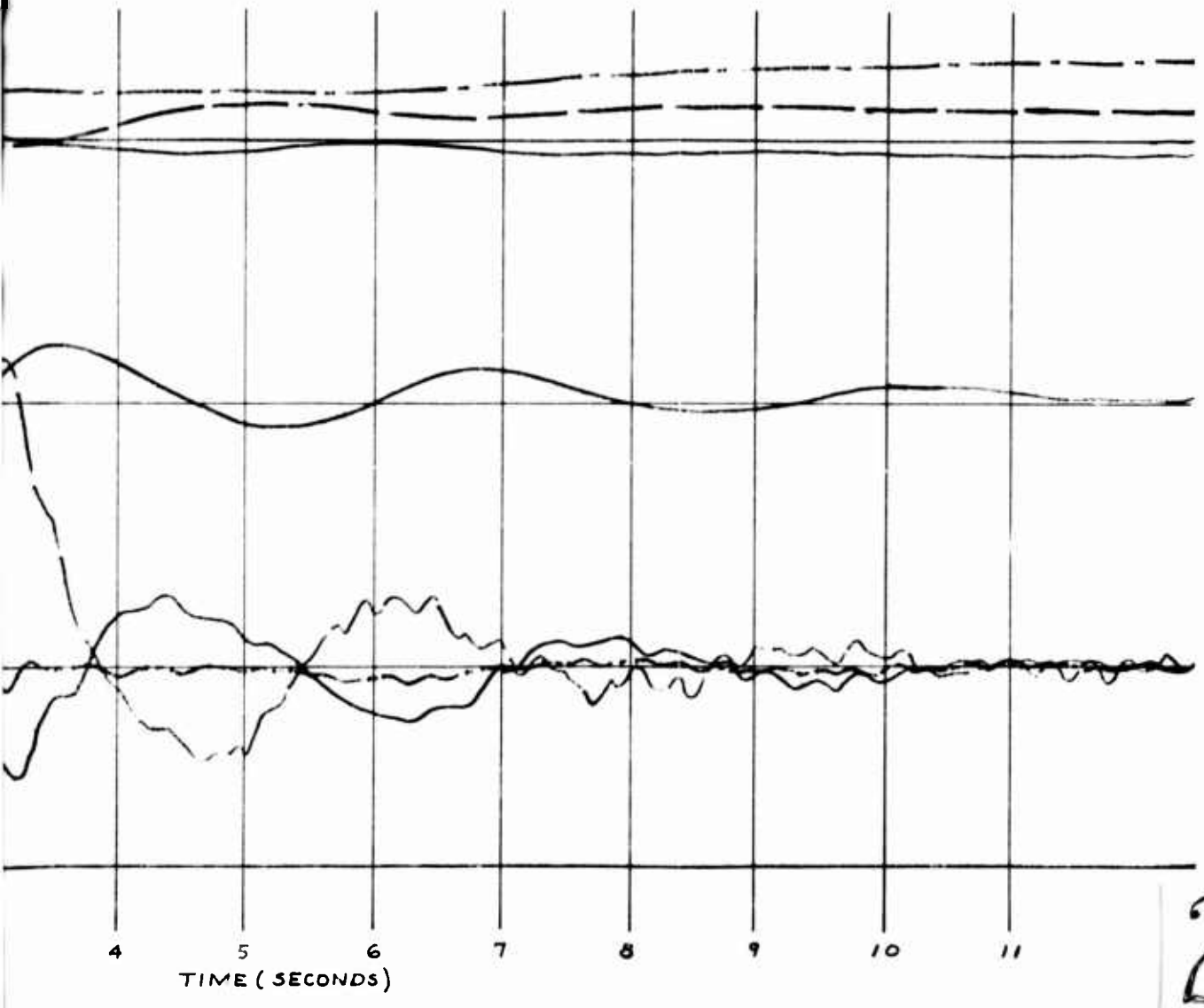
FIGURE 149. RESPONSE TO A RIGHT DIR

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

DE AIR ERATURE (G C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
3.5	138.7	313	85	LEVEL FLIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES

PITCH — · — · —
ROLL ————
YAW — — — —



2

SE TO A RIGHT DIRECTIONAL PULSE

UH-1N USAF S/N 6
T400-CP-400 POWER

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL FUSELAGE STA (IN.)
10,075	3,850	18.5	138.7

NOTE: CARGO DOORS CLOSED, NO EX

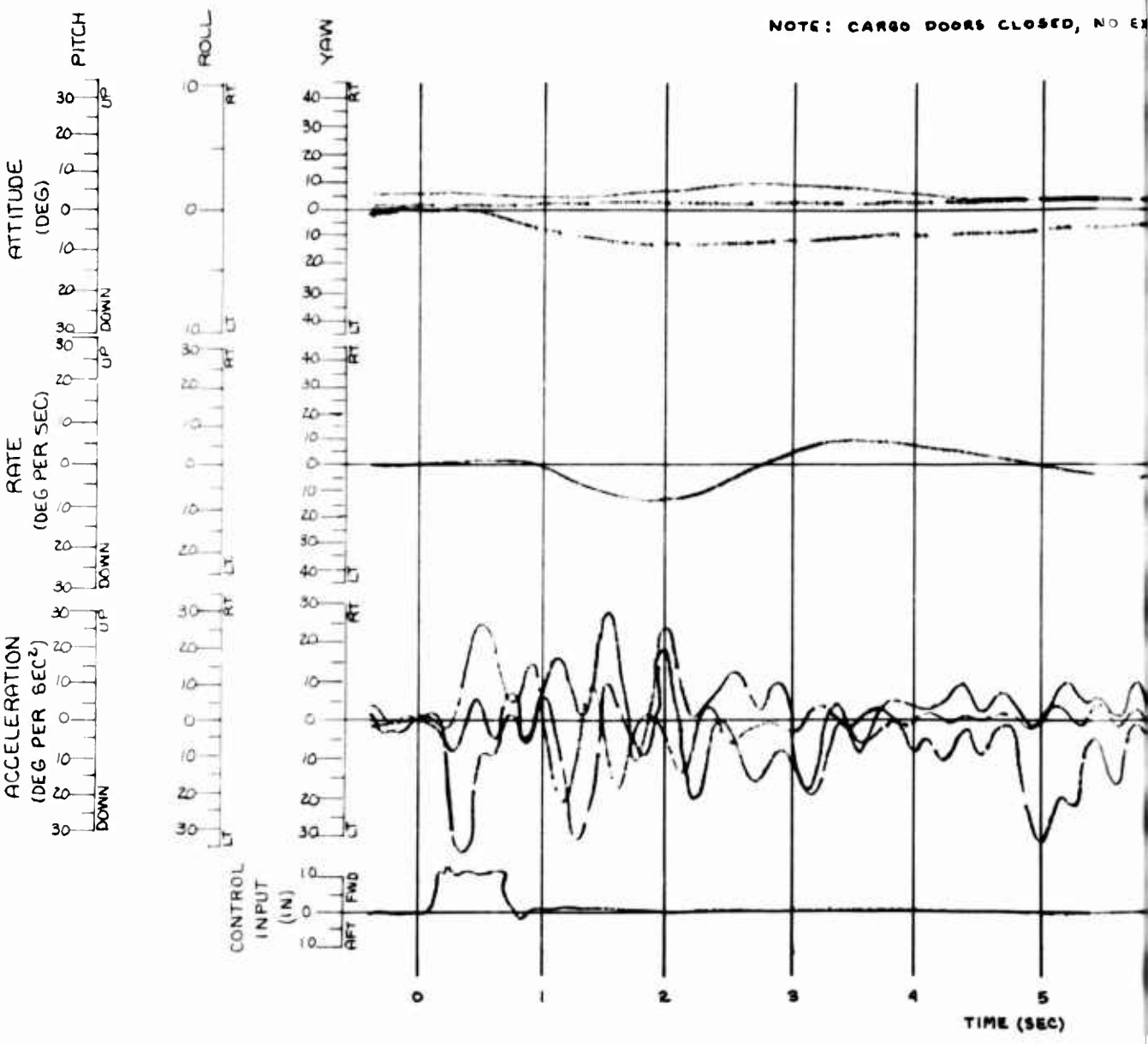


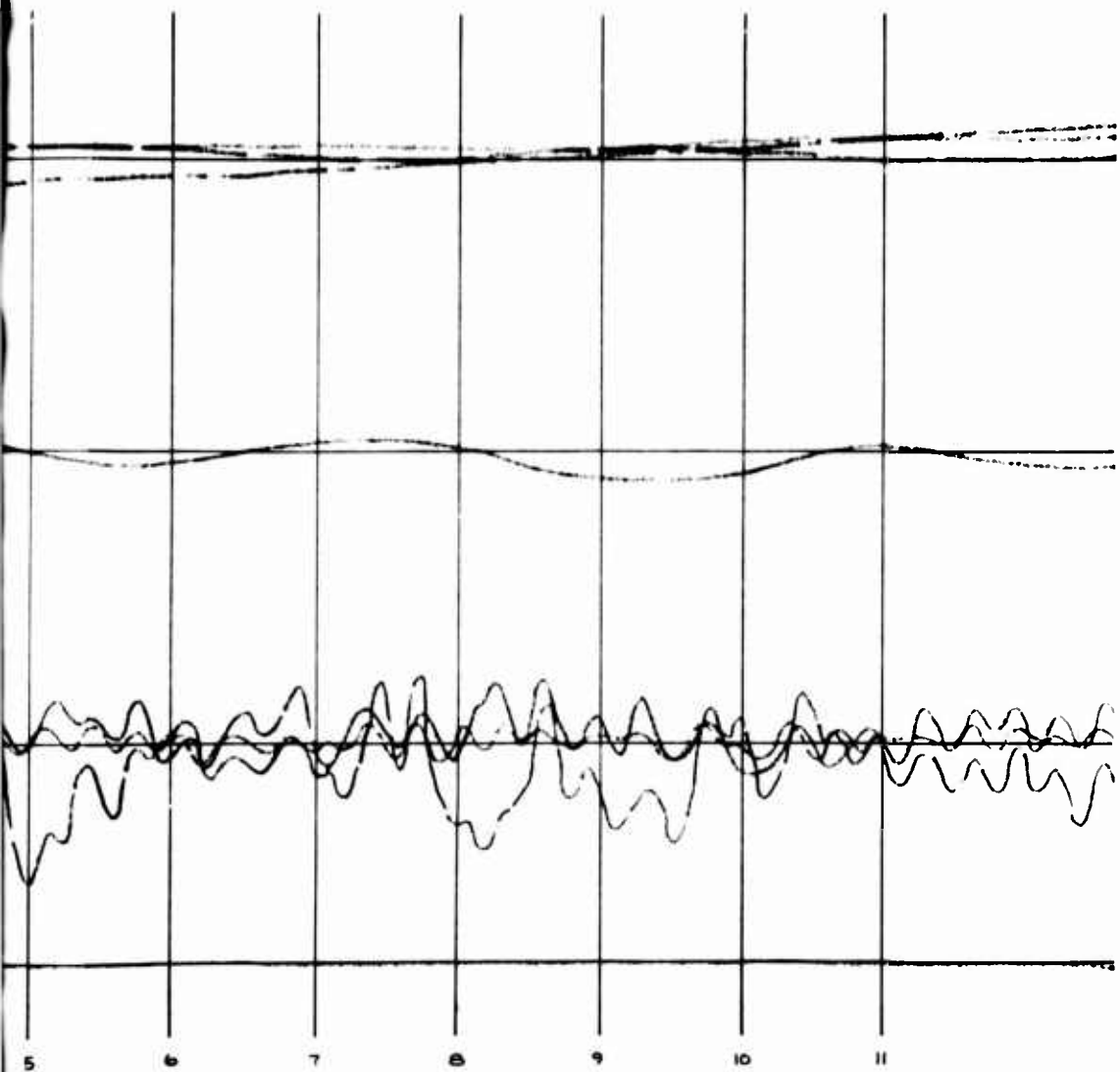
FIGURE 150. RESPONSE TO A FORWARD LONGITUDIN

SAF S/N 68-10776
0 POWER PACKAGE

GITUDINAL C.G. LOCATION LAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	104	LEVEL FLIGHT

OSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ———
YAW — — — —



LONGITUDINAL PULSE

UH-IN US
T400-CP-40

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGIT / FUSEL
10,075	3,850	18.5	

NOTE: CARGO DOOR

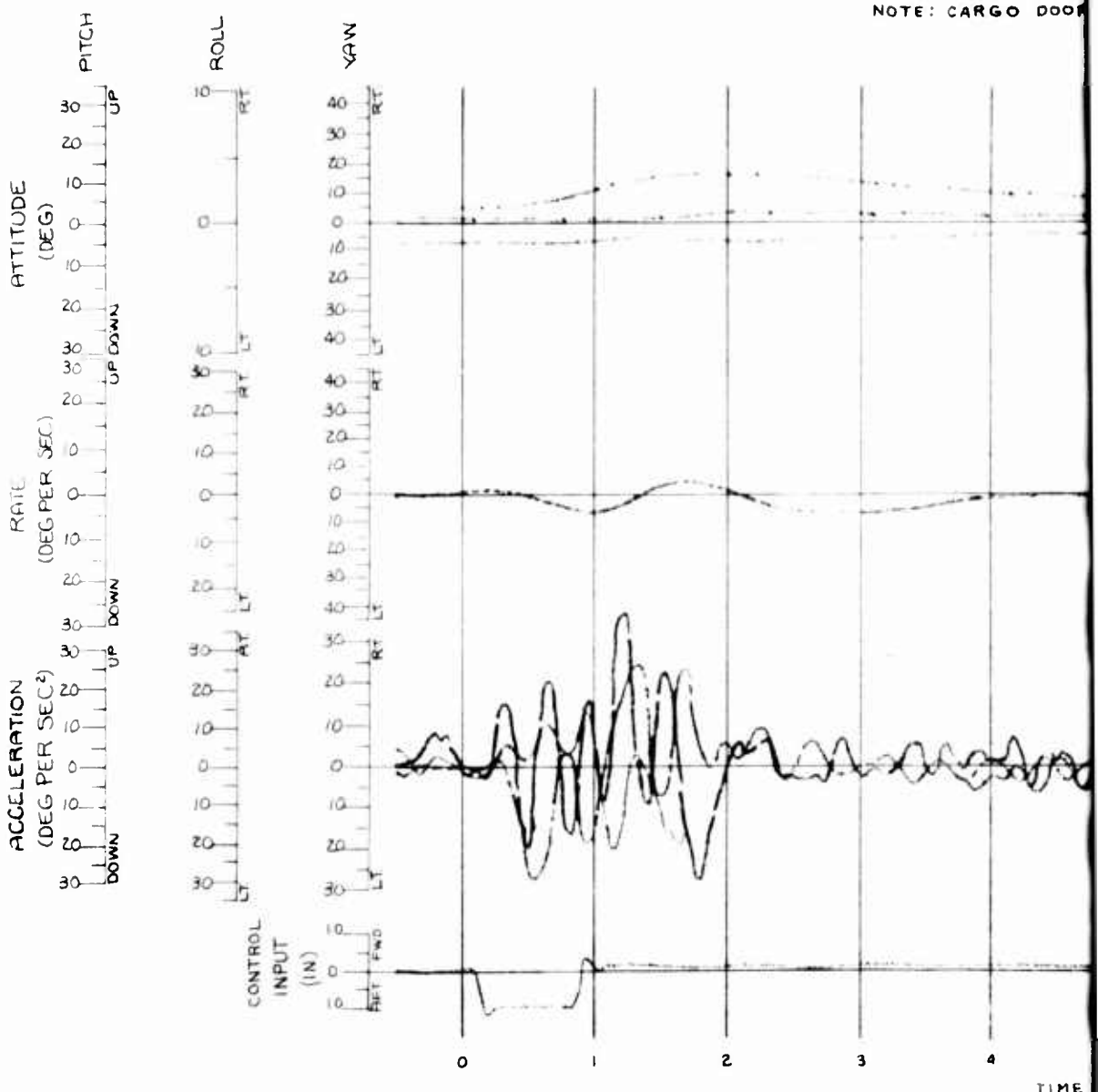


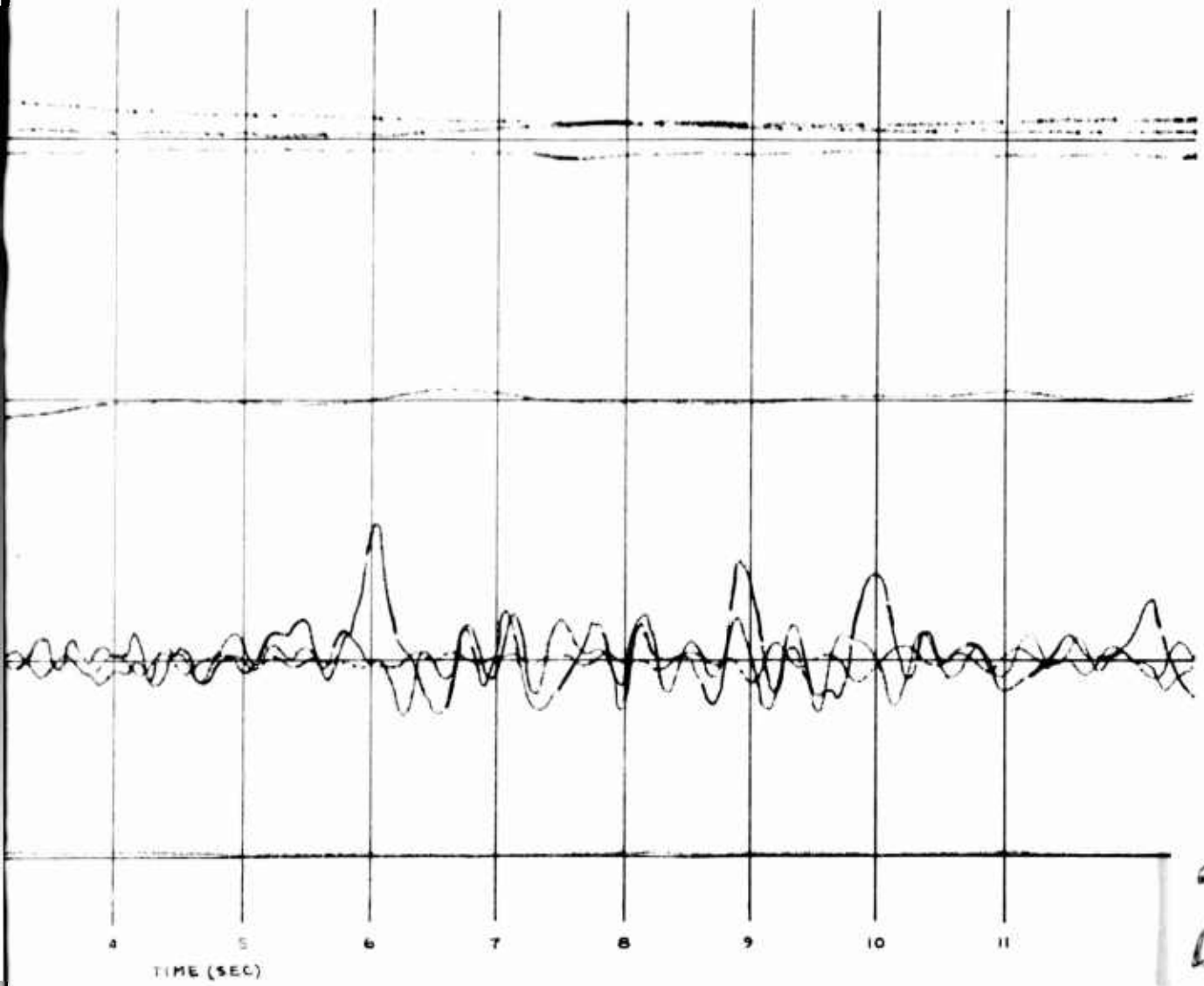
FIGURE 151. RESPONSE TO AN AFT LON

UH-IN USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE S)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	104	LEVEL FLIGHT

OTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — — — —
ROLL ————
YAW — — — —



2

E TO AN AFT LONGITUDINAL PULSE

UH-1N USAF S/N 68-
T400-CP-400 POWER

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR PRESSURE (DEG C)	LONGITUDINAL C.G. L FUSELAGE STATION (IN.)
10,075	3,850	18.5	138.7

NOTE: CARGO DOORS CLOSED, NO E

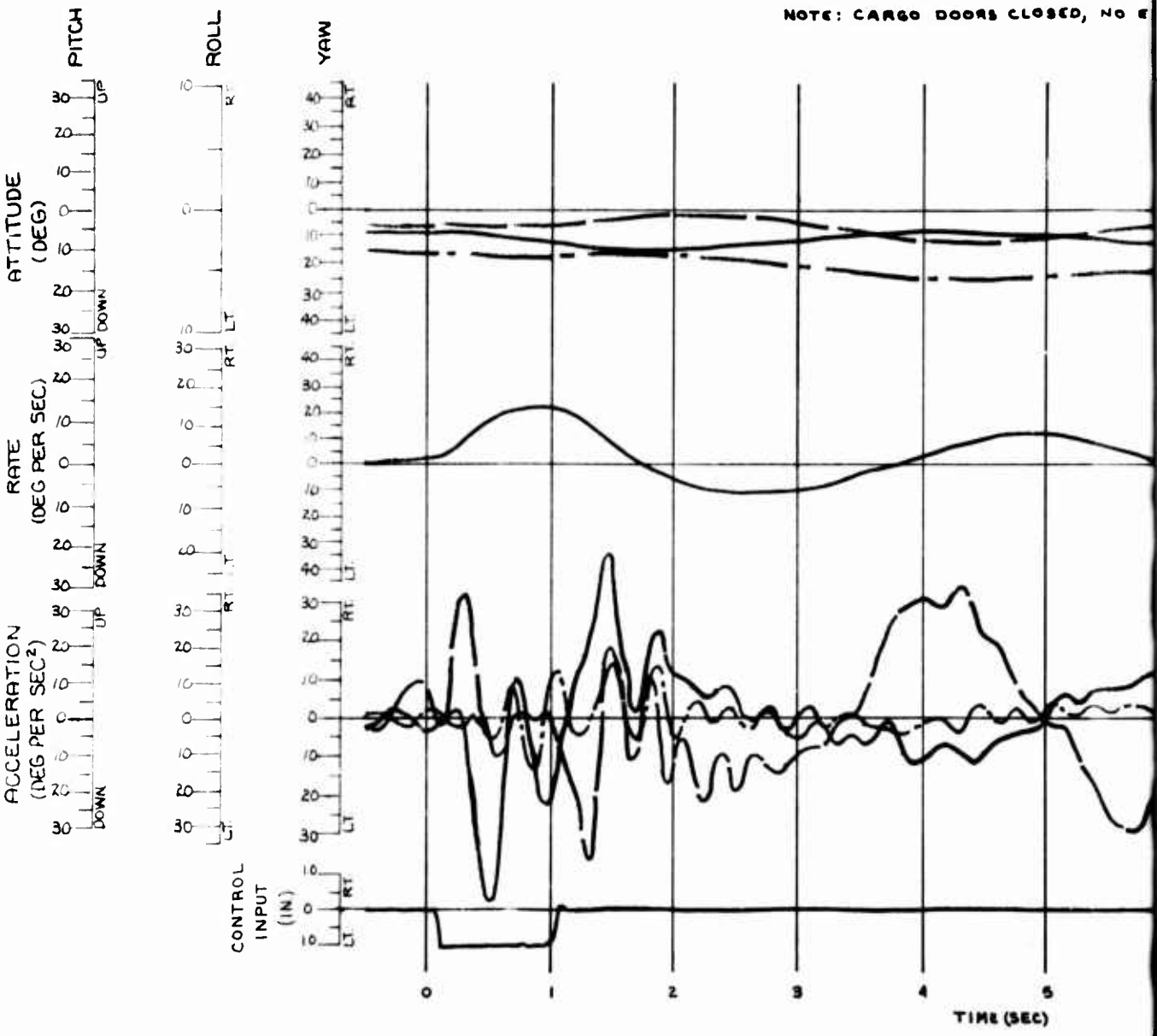


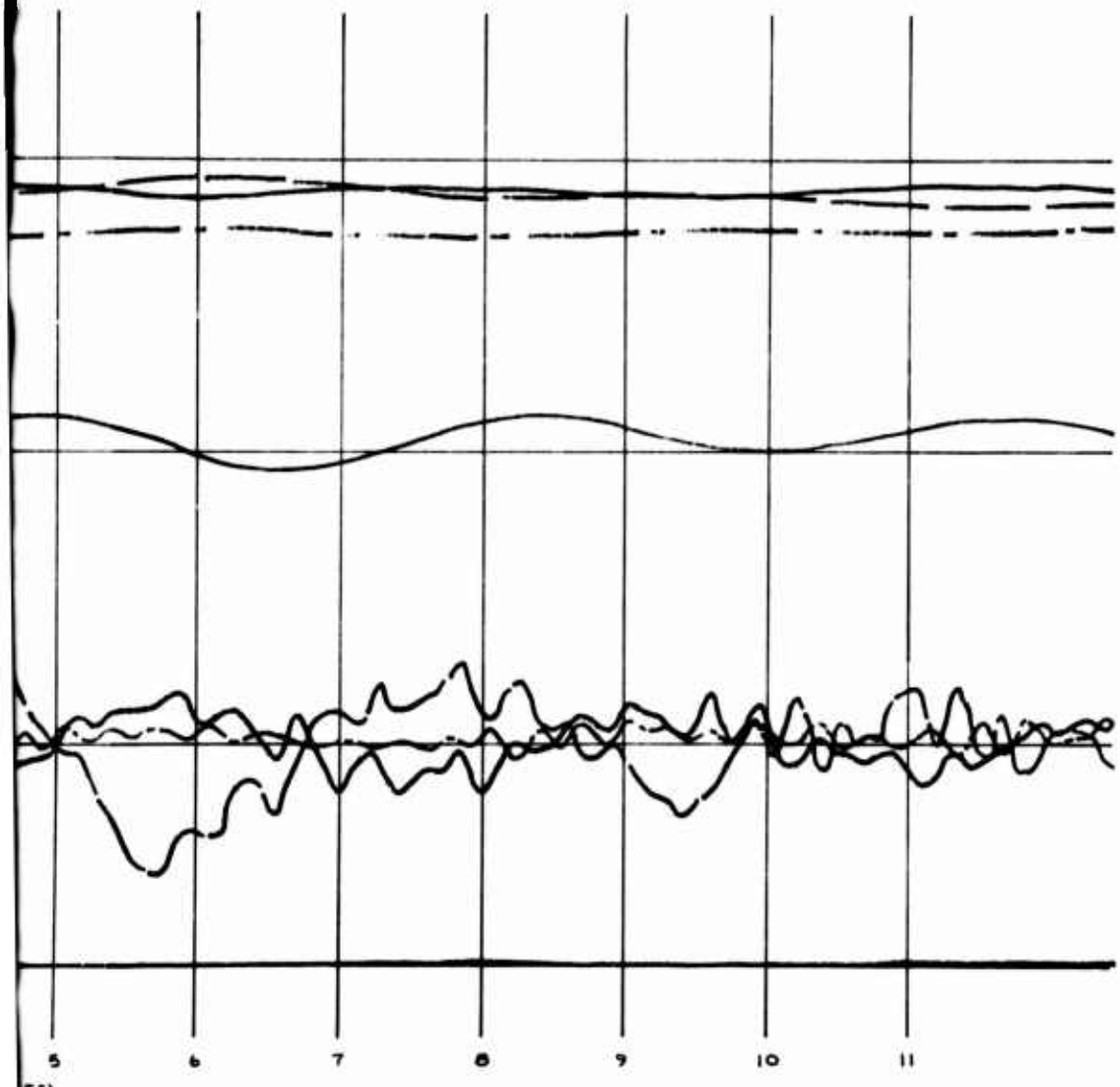
FIGURE 152. RESPONSE TO A LEFT LATERAL PULSE

SAF S/N 68-10776
OD POWER PACKAGE

DINAL C.G. LOCATION GE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	313	104	LEVEL FLIGHT

CLOSED, NO EXTERNAL STORES.

PITCH — · — · — —
ROLL ————————
YAW — — — — —



EC)

RAL PULSE

UH-1N USAF S
T400-CP-400 POW

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINA FUSELAGE (IN
10,075	3,850	18.5	15(

NOTE: CARGO DOORS CL

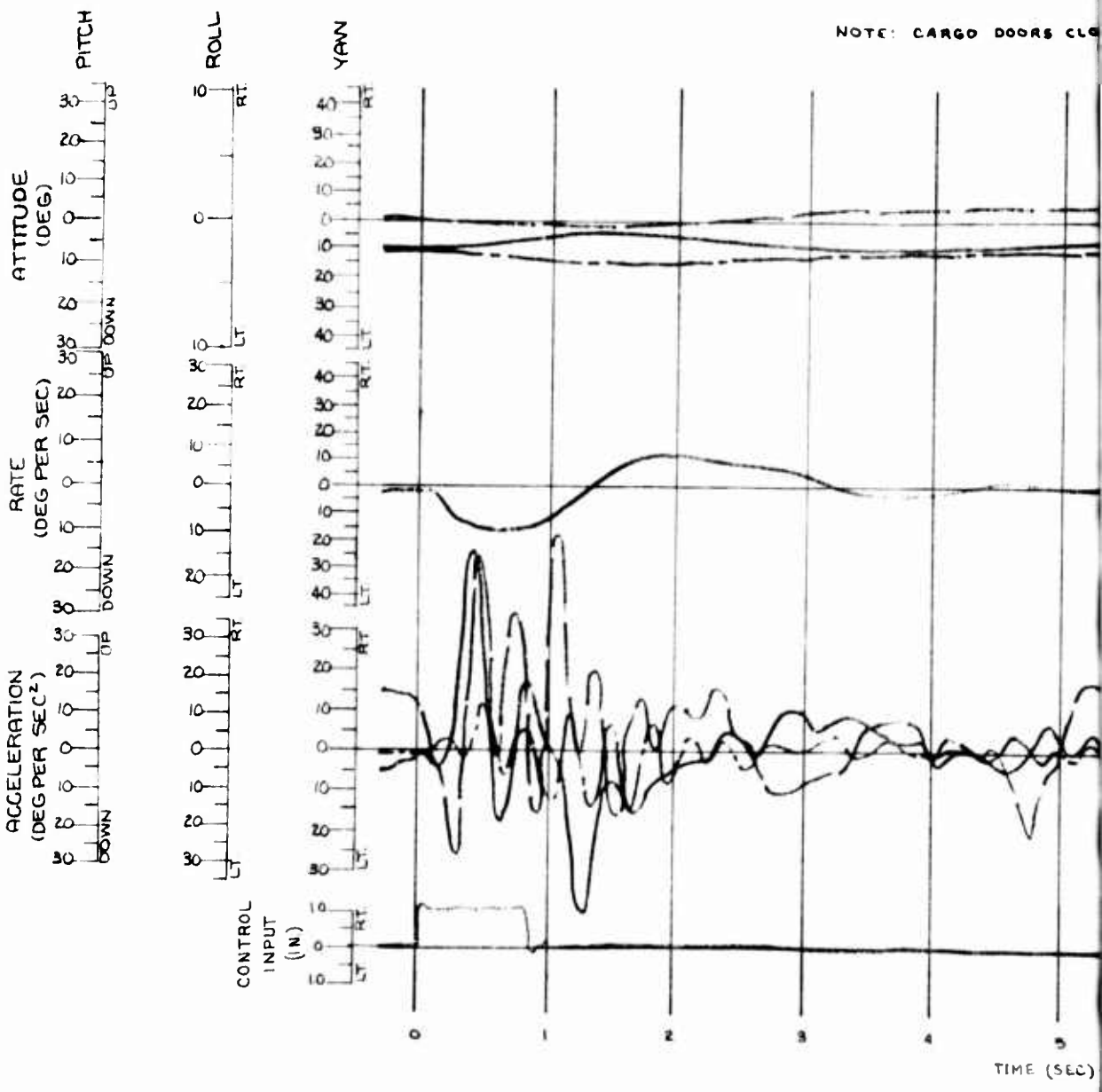


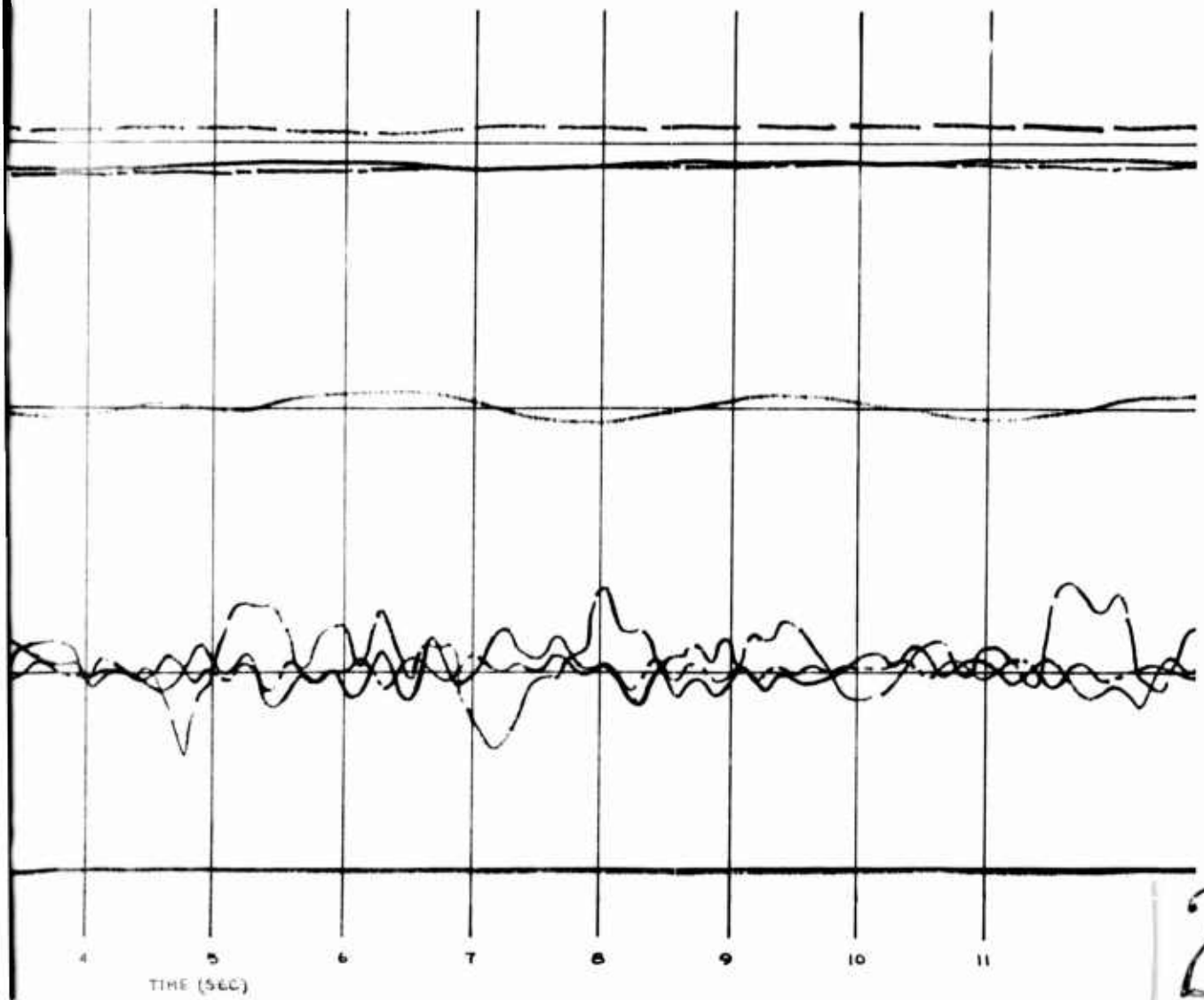
FIGURE 153. RESPONSE TO A RIGHT LATERA

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	104	LEVEL FLIGHT

TE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



2

TO A RIGHT LATERAL PULSE

UH-1N USAF S/N 68-10
T400-CP-400 POWER PA

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LO FUSELAGE STATION (IN.)
10,075	3,850	18.5	138.7

NOTE: CARGO DOORS CLOSED, NO

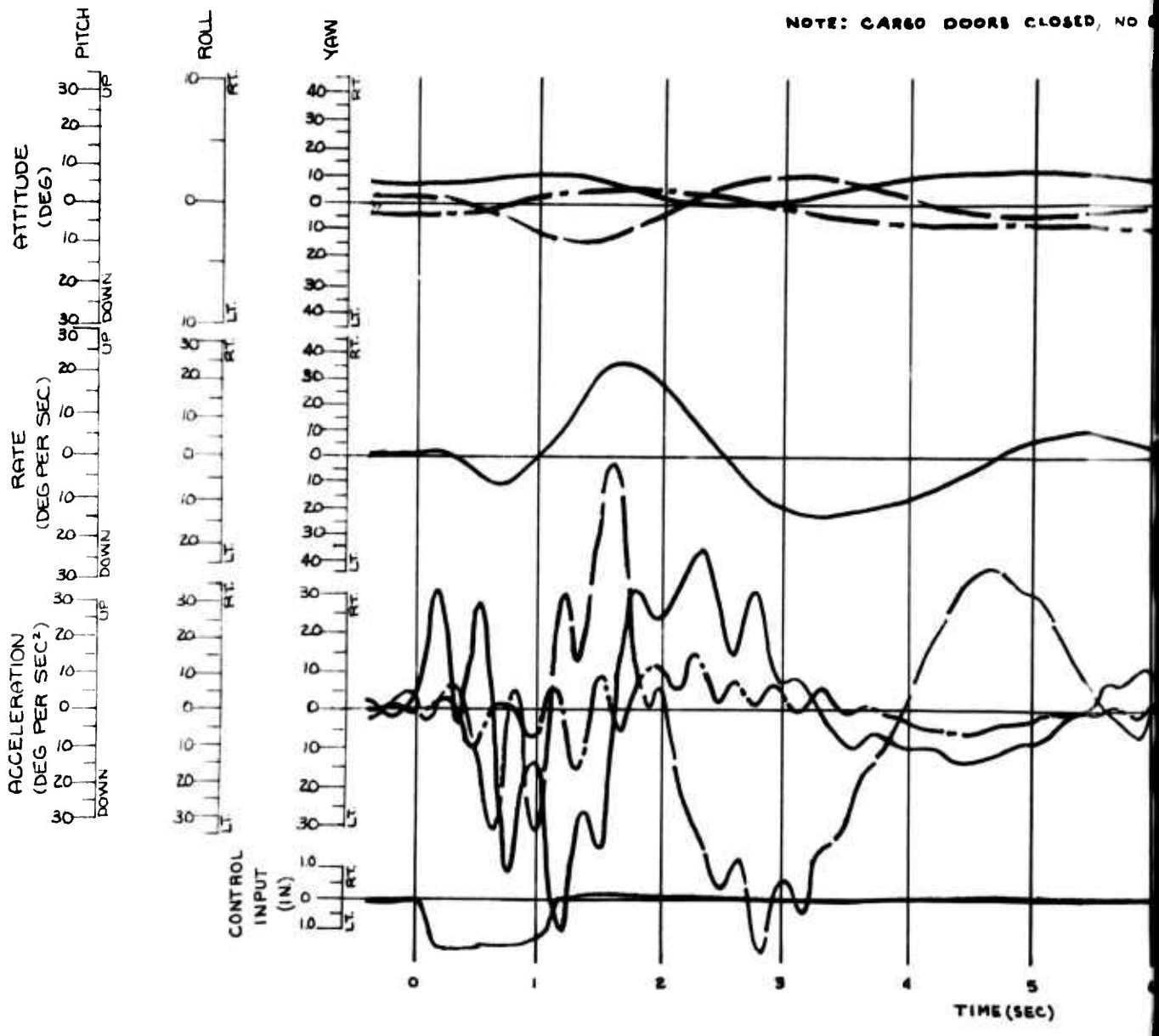


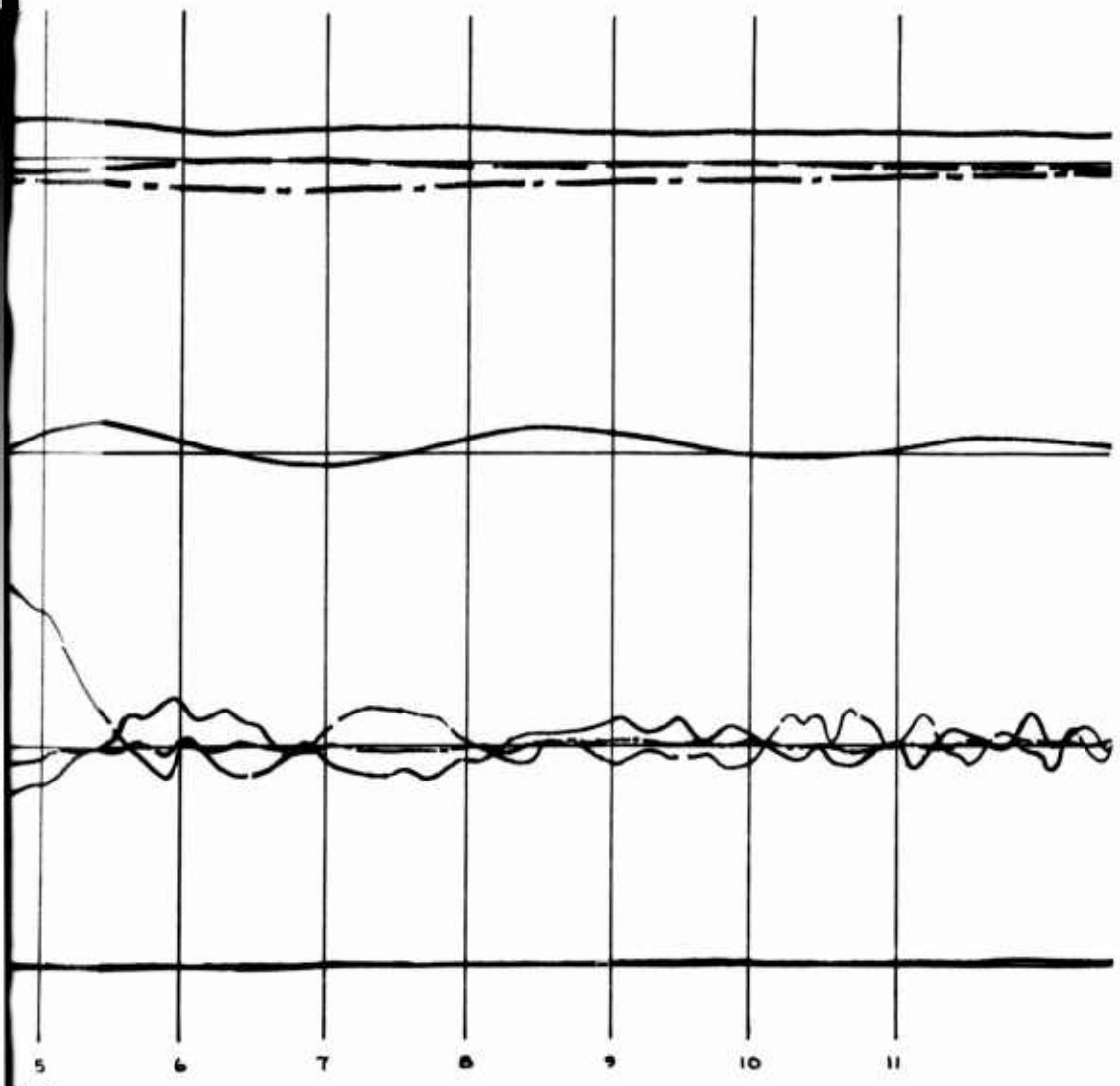
FIGURE 154. RESPONSE TO A LEFT DIRECTIONAL PUL

AF S/N 68-10776
O POWER PACKAGE
UDINAL C.G. LOCATION
AGE STATION
(IN.)
138.7

ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
313	104	LEVEL FLIGHT

CLOSED, NO EXTERNAL STORES.

PITCH — · — · — · —
ROLL ————————
YAW — — — — —



RECTIONAL PULSE

UH-1N USAF S/N 68-1
T400-CP-400 POWER P
LONGITUDINAL C.G. L
FUSELAGE STATION
(IN.)
138.7

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOORS CLOSED, NO

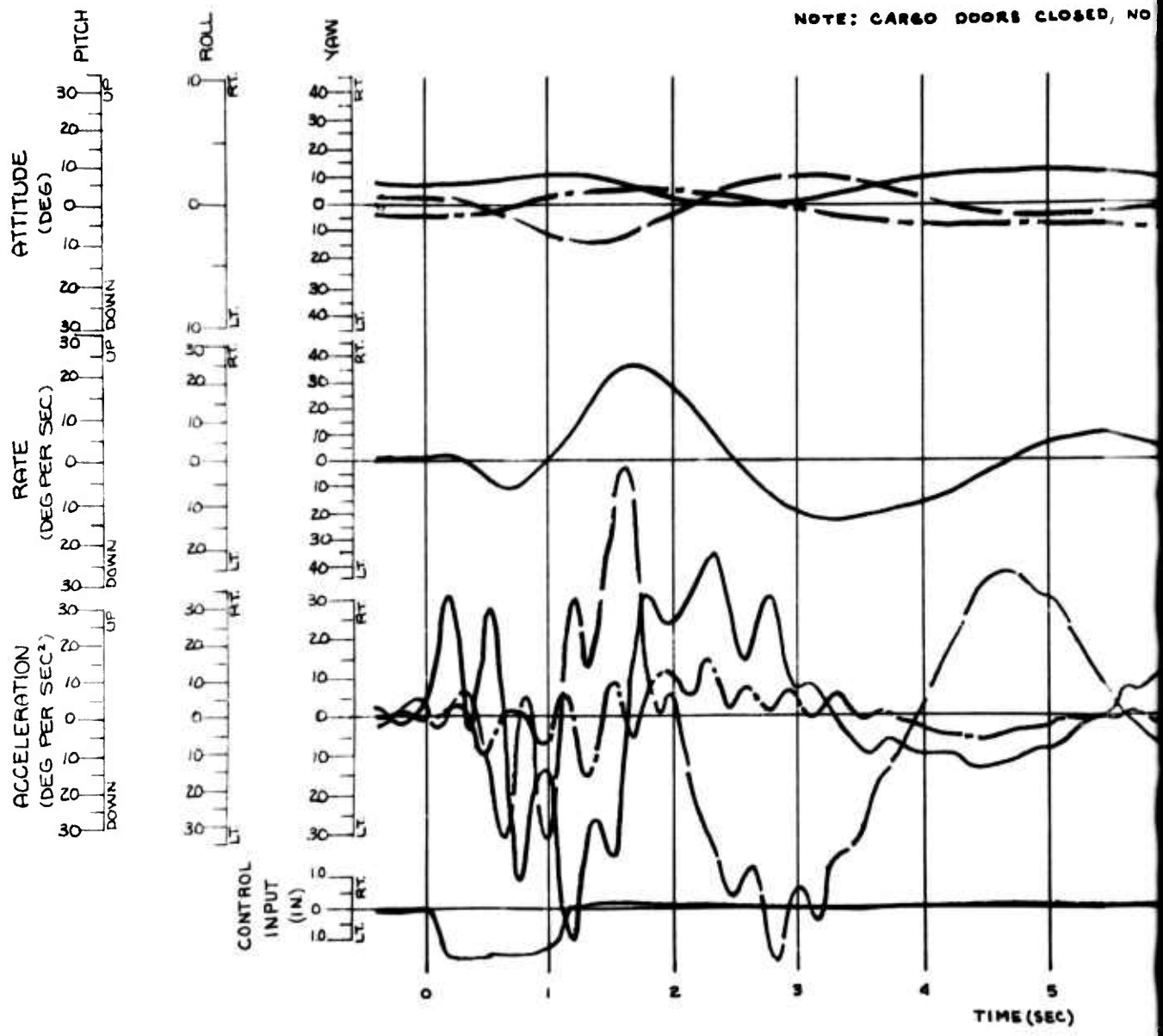


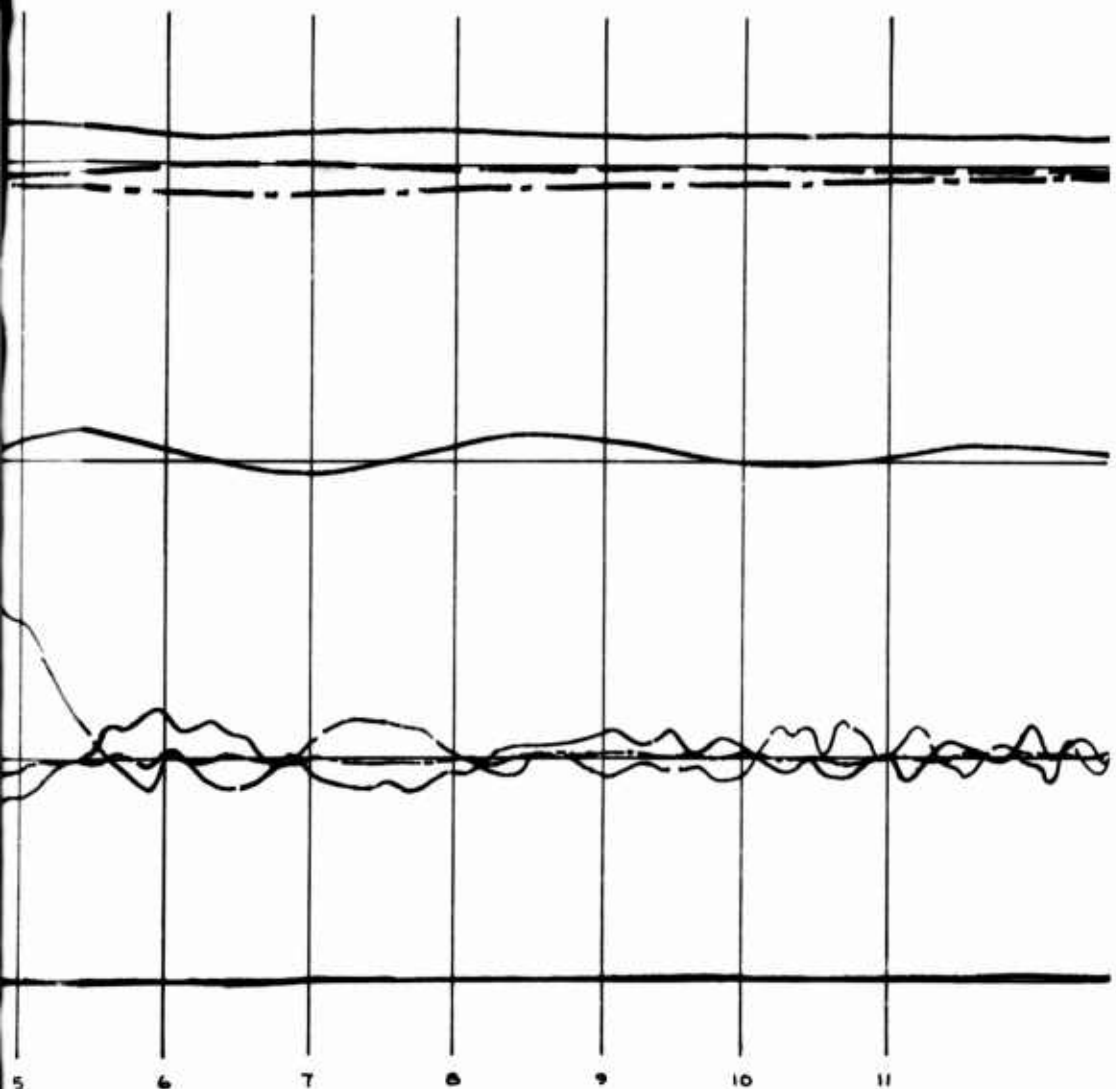
FIGURE 154. RESPONSE TO A LEFT DIRECTIONAL P

S/N 68-10776
POWER PACKAGE

INAL C.G. LOCATION E STATION IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
38.7	313	104	LEVEL FLIGHT

CLOSED, NO EXTERNAL STORES.

PITCH — · — · — · —
ROLL ————————
YAW — — — — —



EC)

ECTIONAL PULSE

UH-1N
T400-CP
LO
FU

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT.)	OUTSIDE AIR TEMPERATURE (DEG C)
10,075	3,850	18.5

NOTE: CARGO DOOR

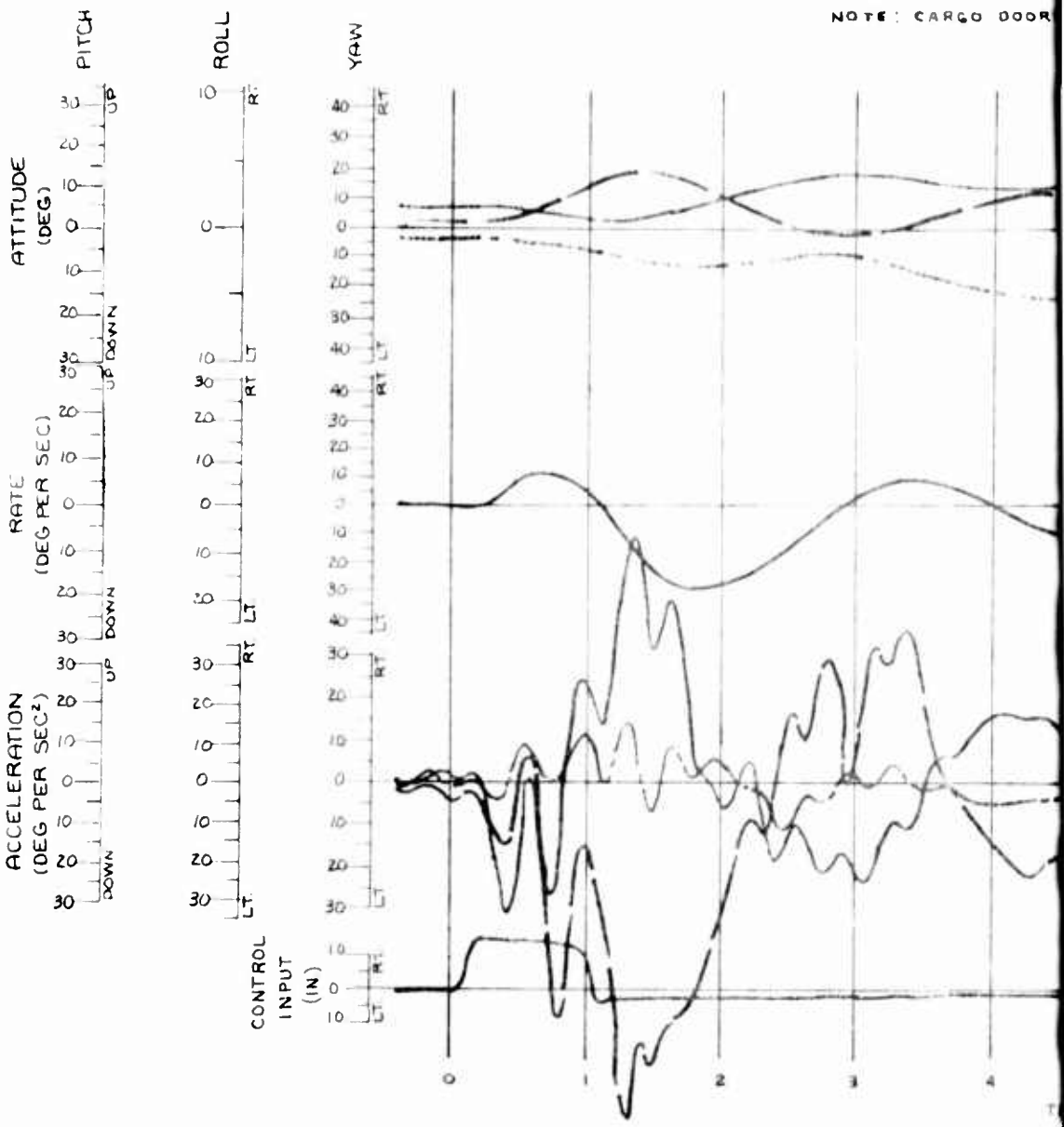


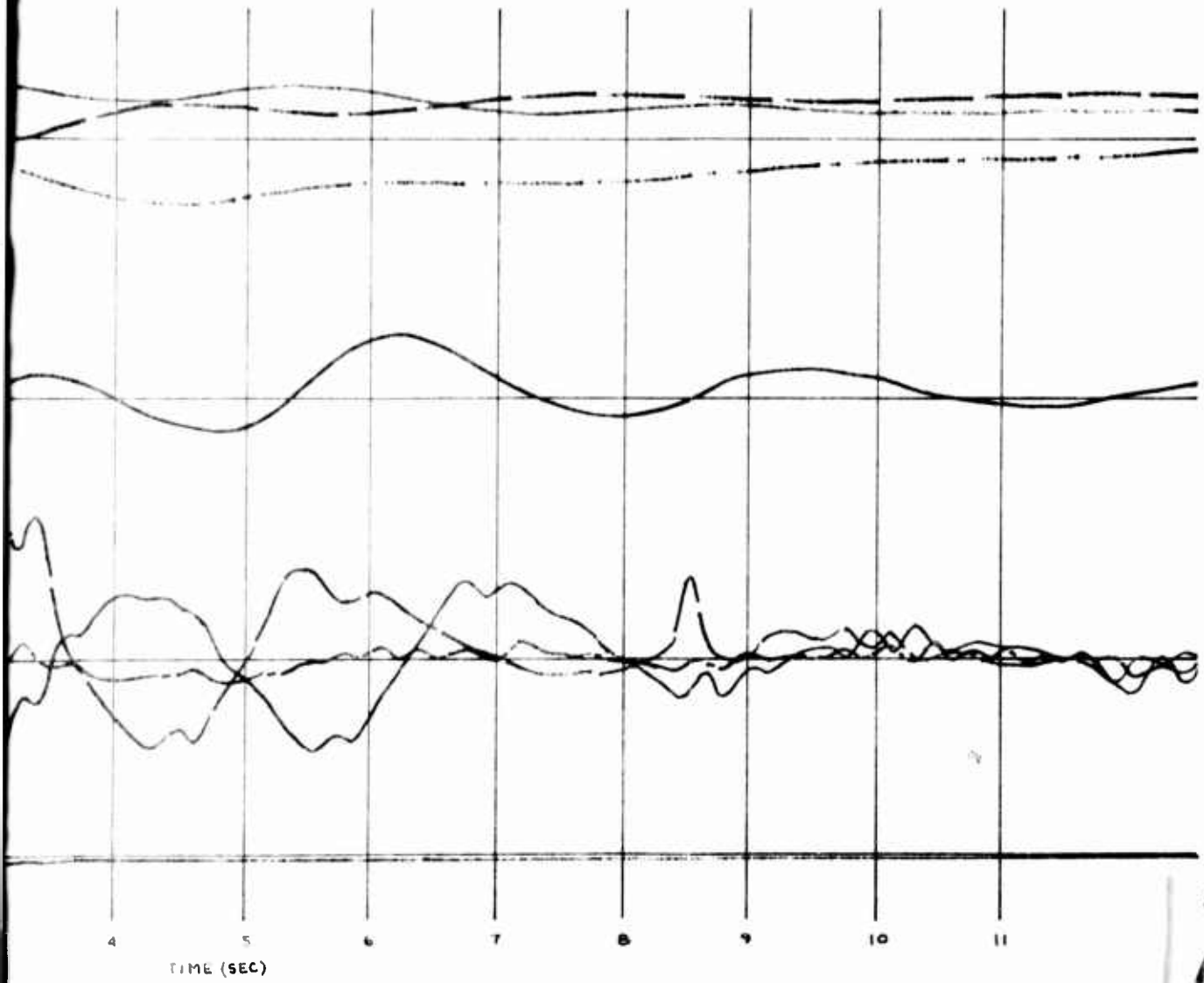
FIGURE 155 RESPONSE O R RIGH

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	313	104	LEVEL FLIGHT

: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



12

NSE TO A RIGHT DIRECTIONAL PULSE

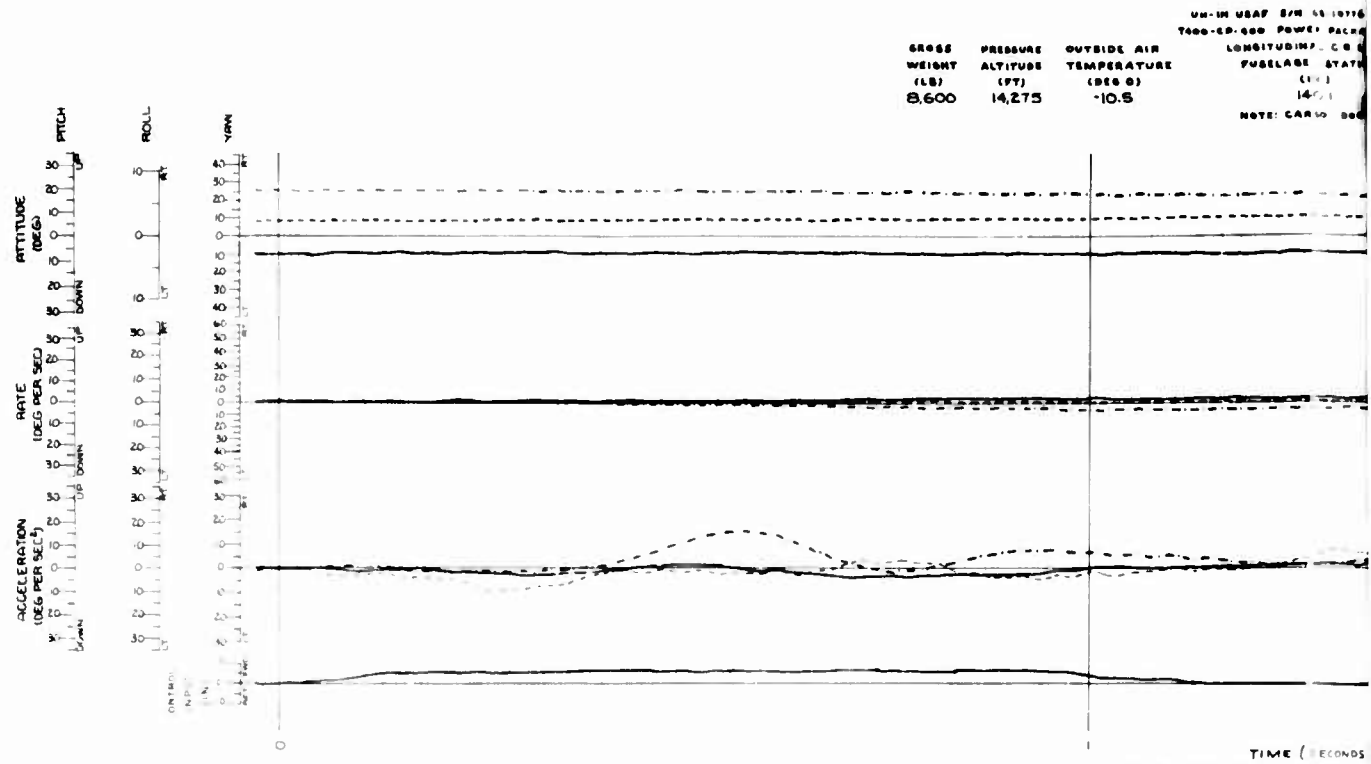


FIGURE 156. RESPONSE TO A FORWARD

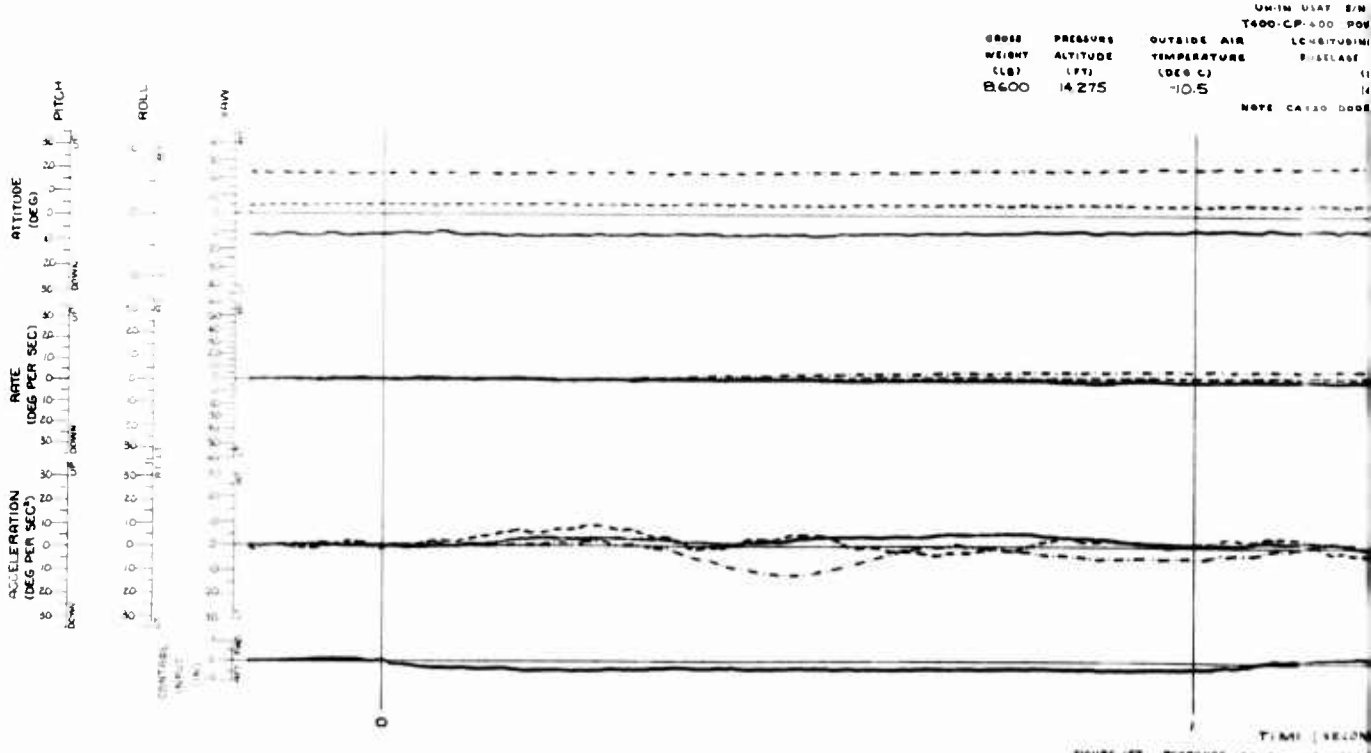


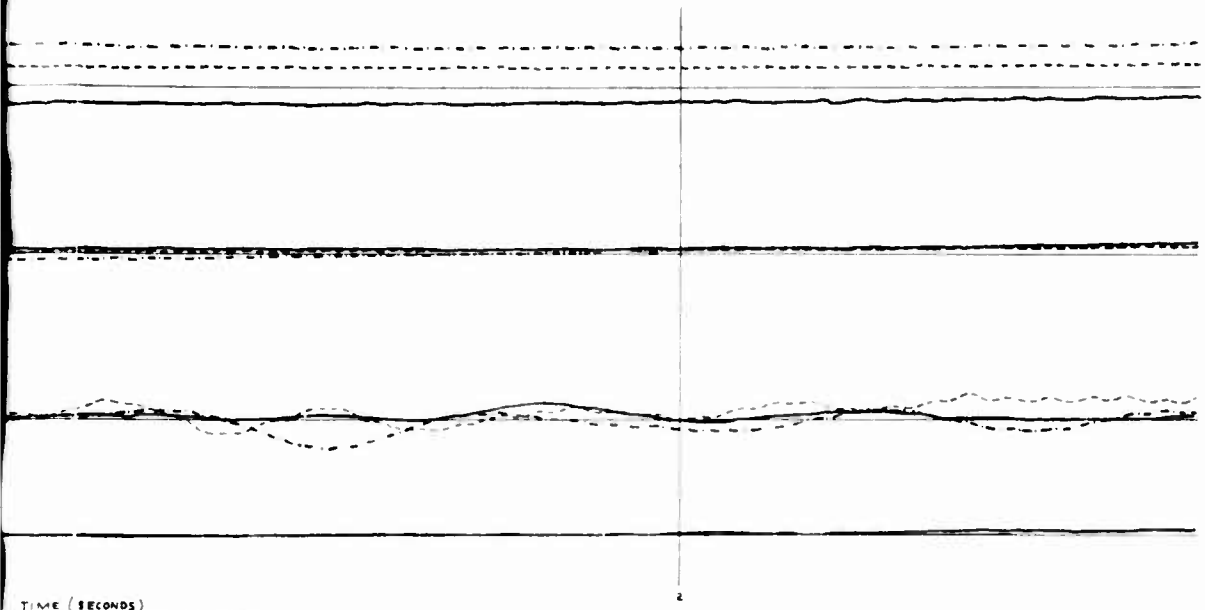
FIGURE 157. RESPONSE TO AN

...AF S/N 68-10776
...00 POWER PACKAGE

...GITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
140.1	312	82	LEVEL FLIGHT

...TE CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — — — —
ROLL ————
YAW — — — —



TIME (SECONDS)

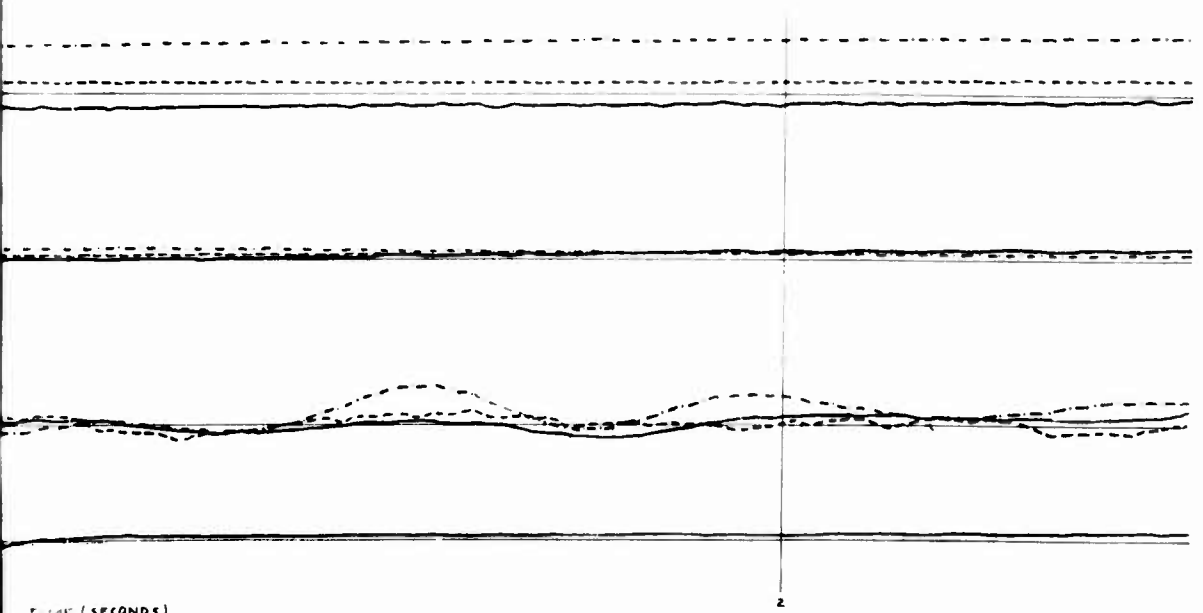
...SE TO A FORWARD LONGITUDINAL PULSE

...IN USAF S/N 68-10776
T400-CP 400 POWER PACKAGE

...R LONGITUDINAL C.G. LOCATION ...E FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
140.1	312	82	LEVEL FLIGHT

NOTE CARGO DOORS CLOSED, NO EXTERNAL STORES

PITCH — — — —
ROLL ————
YAW — — — —



...IME (SECONDS)

...ET LONGITUDINAL PULSE

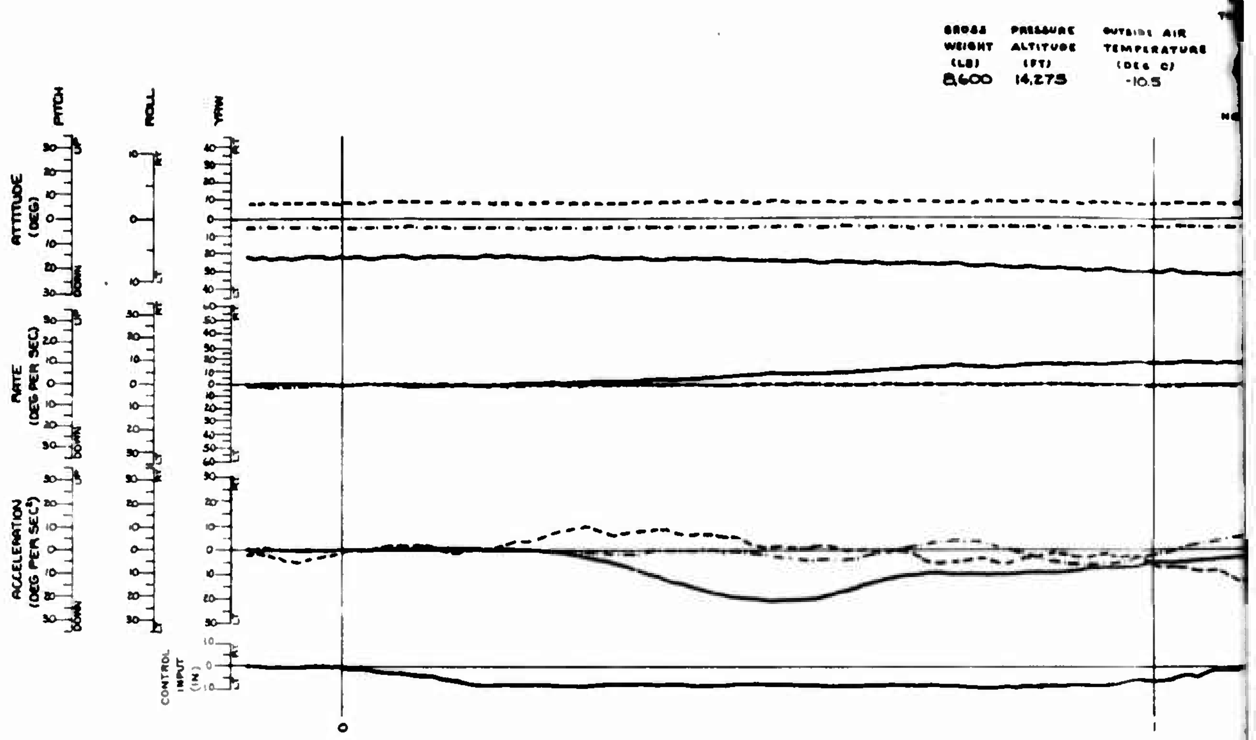


FIGURE 158. RESPONSE T

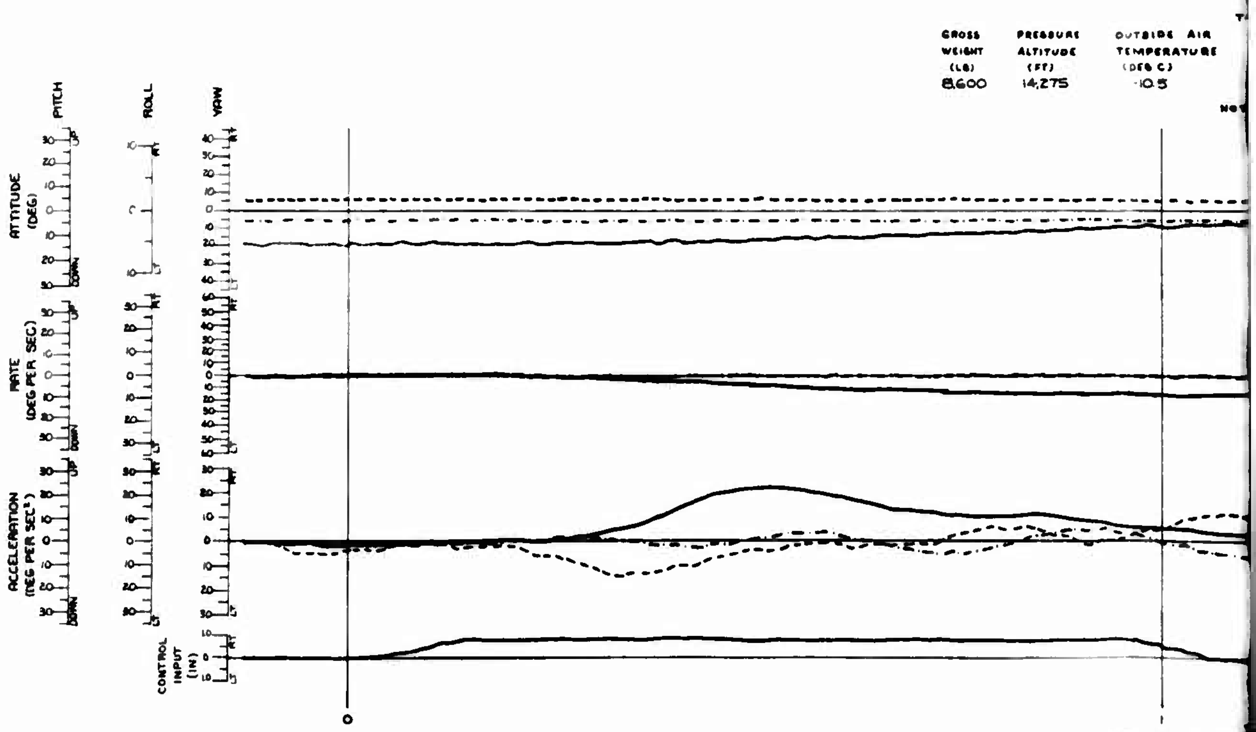


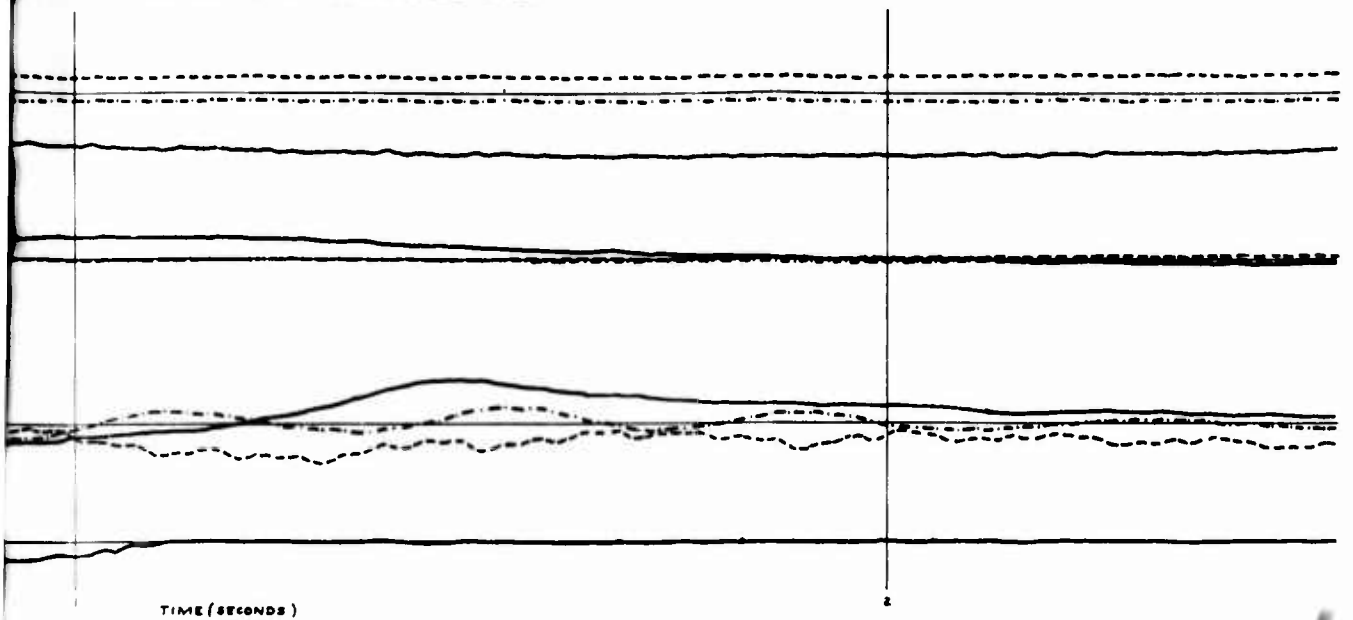
FIGURE 159 RESPO

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
+10.5	140.1	312	82	LEVEL FLIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ———
YAW — — — —



TIME (SECONDS)

FIGURE 158 RESPONSE TO A LEFT LATERAL PULSE

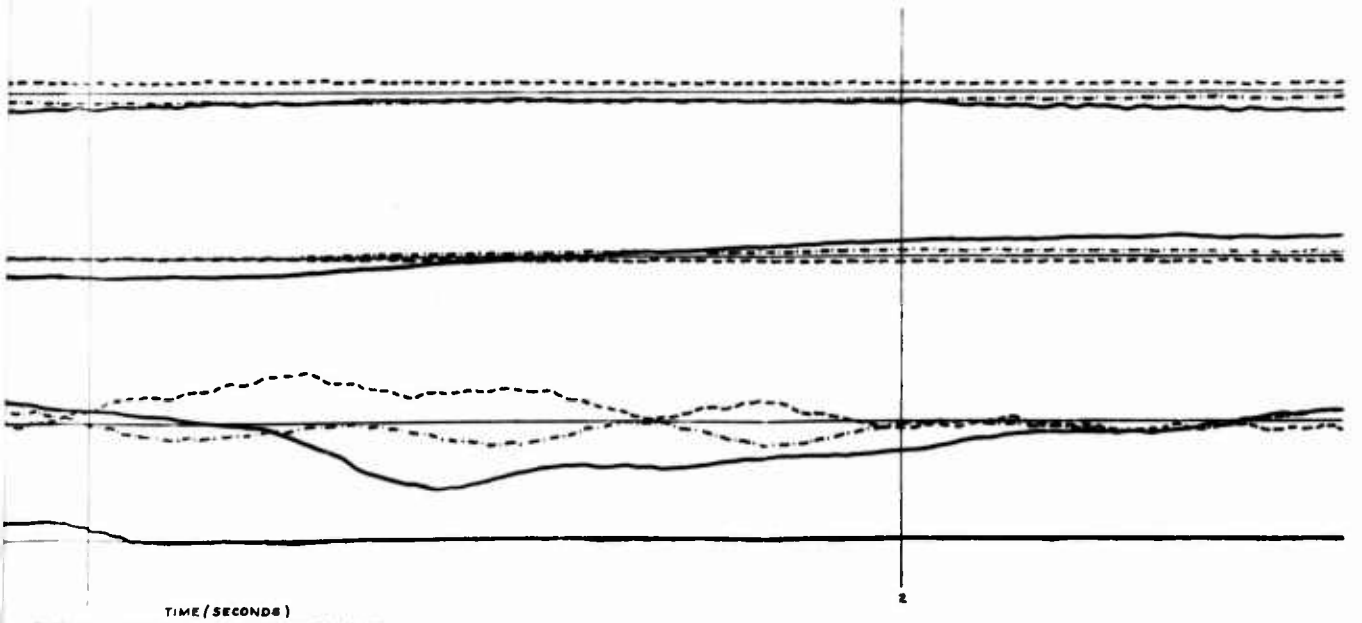
12

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
+10.5	140.1	312	82	LEVEL FLIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — — — —
ROLL ———
YAW — — — —



TIME (SECONDS)

FIGURE 159 RESPONSE TO A RIGHT LATERAL PULSE

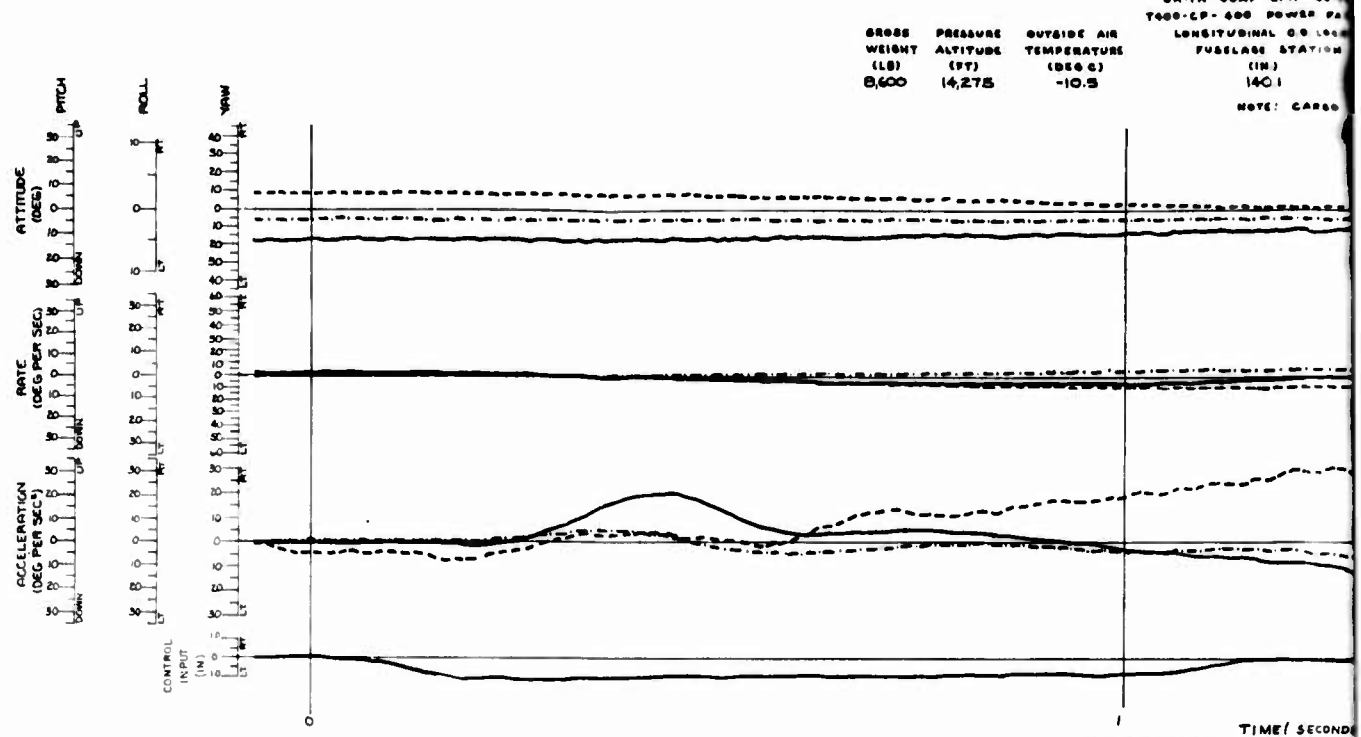


FIGURE 160. RESPONSE TO A LEFT DIRE

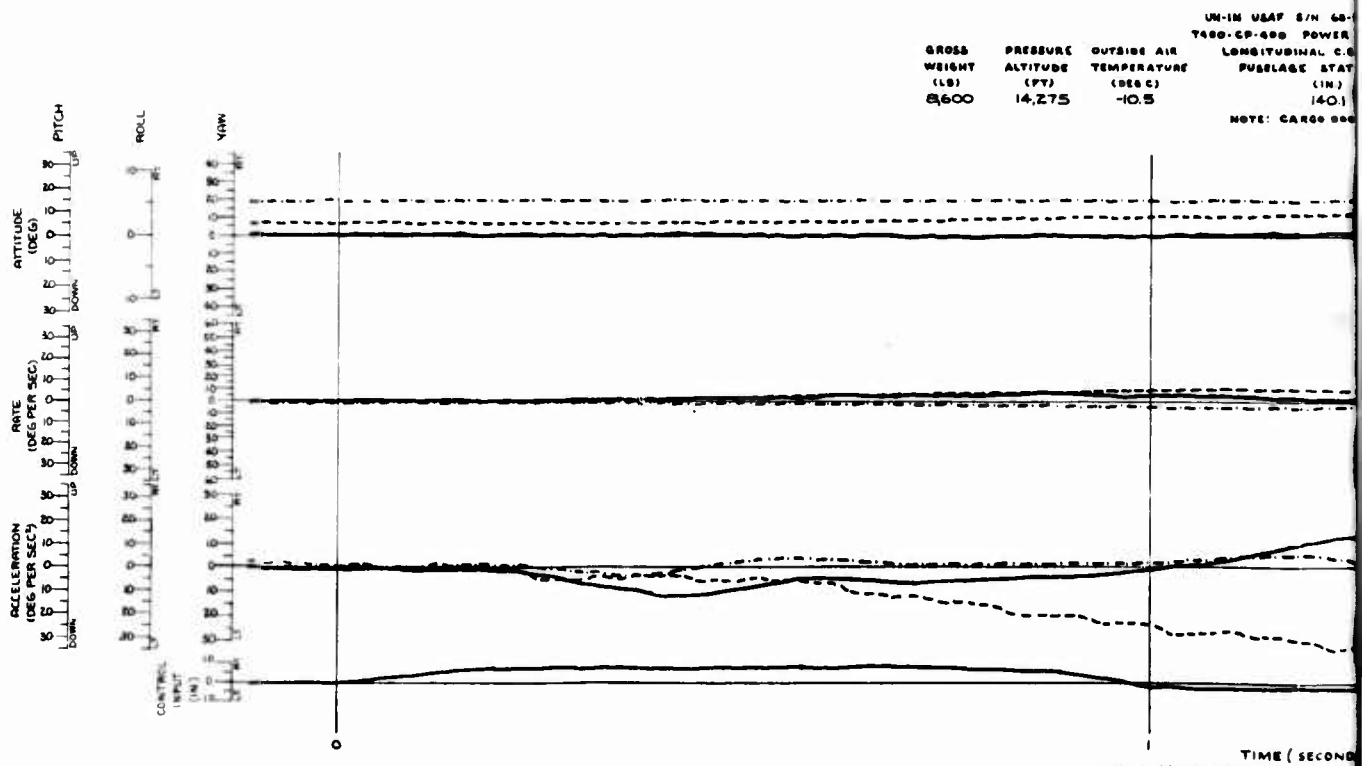


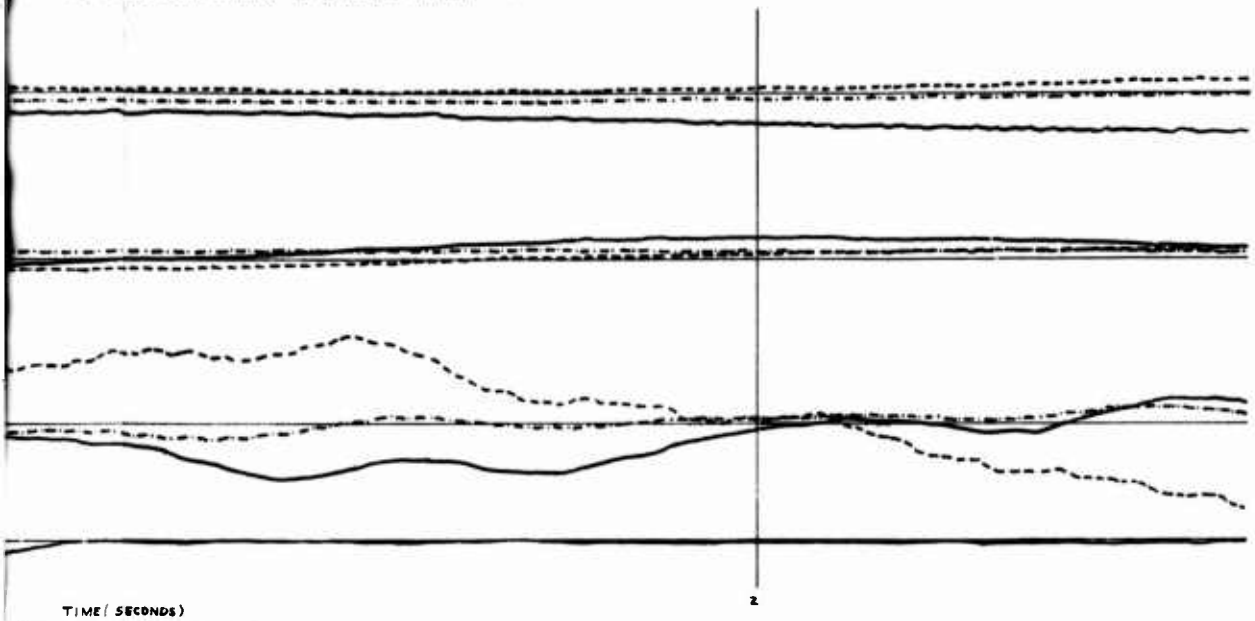
FIGURE 161. RESPONSE TO R AIGHT

N USAF S/N 68-10776
T-600 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
140.1	312	82	LEVEL FLIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

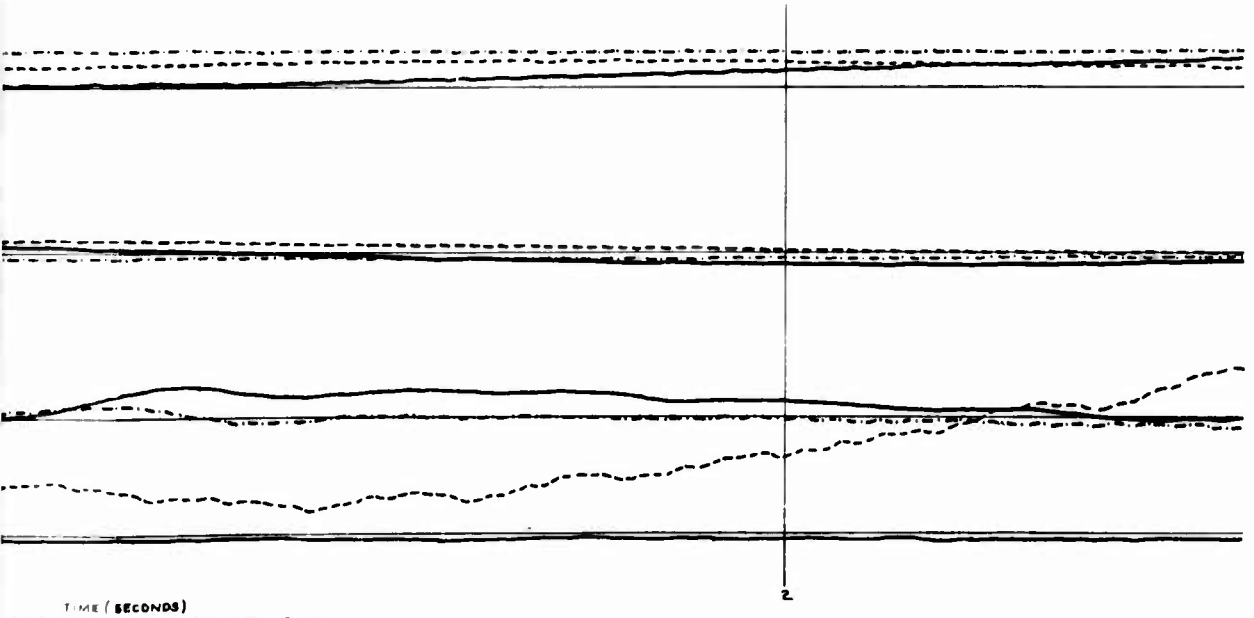
PONSE TO A LEFT DIRECTIONAL PULSE

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
140.1	312	82	LEVEL FLIGHT

NOTE: CARGO DOORS CLOSED, NO EXTERNAL STORES

PITCH — · — · —
ROLL ————
YAW — — — —



TIME (SECONDS)

RESPONSE TO A RIGHT DIRECTIONAL PULSE

UH-IN USA
T400-CP-40

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONG
10,025	3,710	19.1	F

NOTE: CARGO DOORS

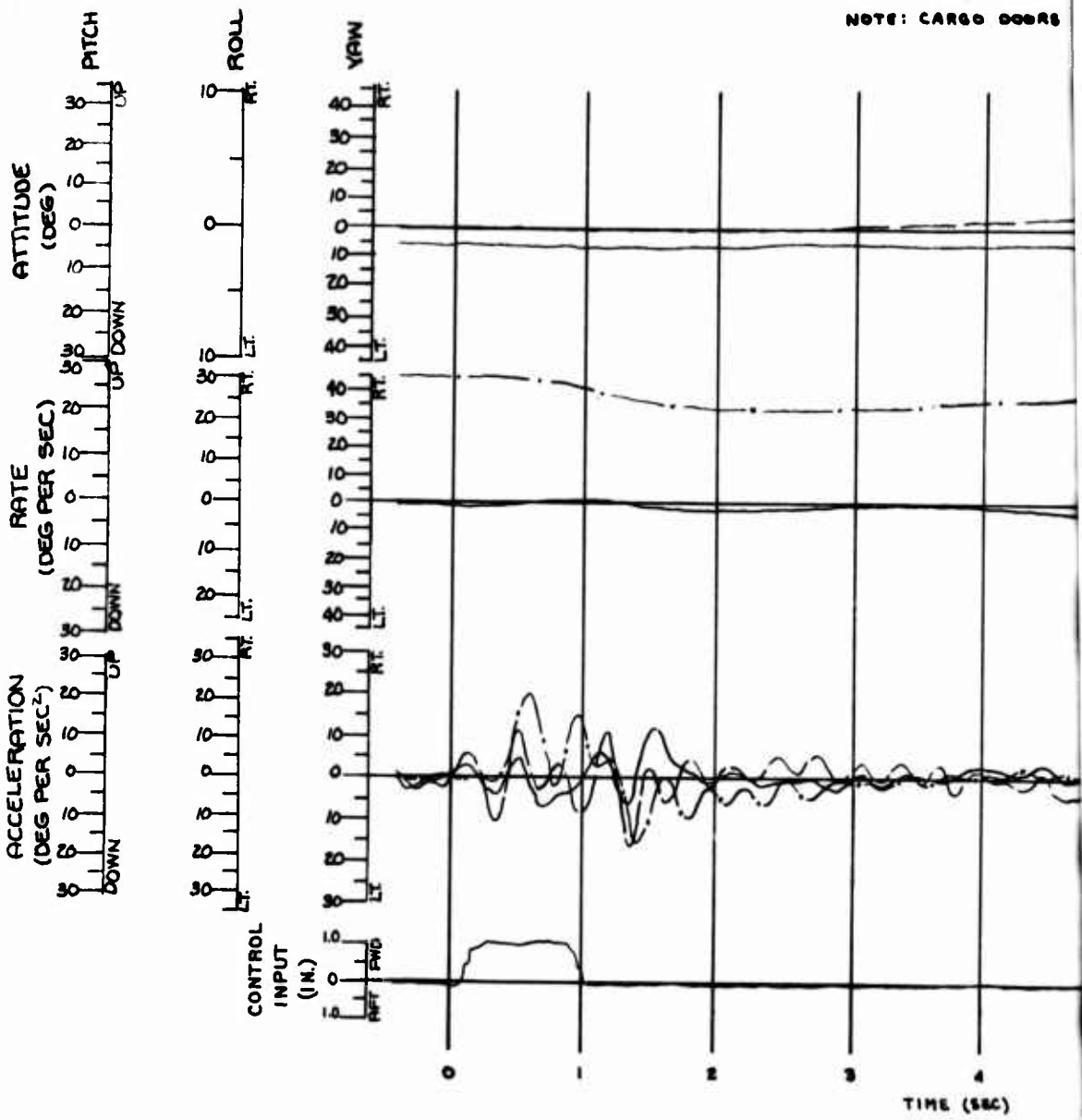


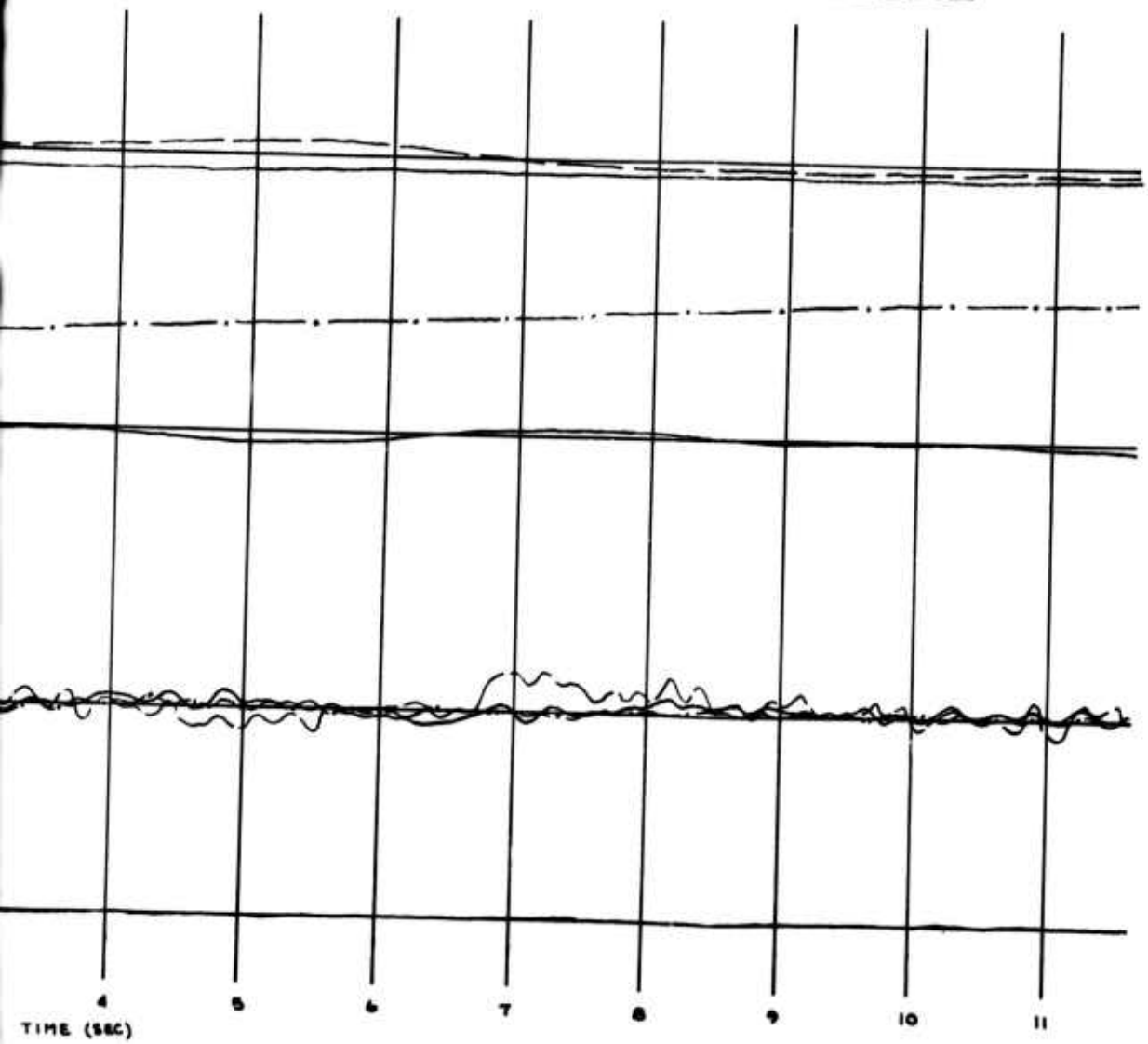
FIGURE 162. RESPONSE TO A FORWARD

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR ATURE C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	312	65	DESCENT

TE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



2

SE TO A FORWARD LONGITUDINAL PULSE

UH-1N USA
T400-CP-40
LONGIT
FUSEL

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,025	3,710	19.1

NOTE: CARGO DOORS

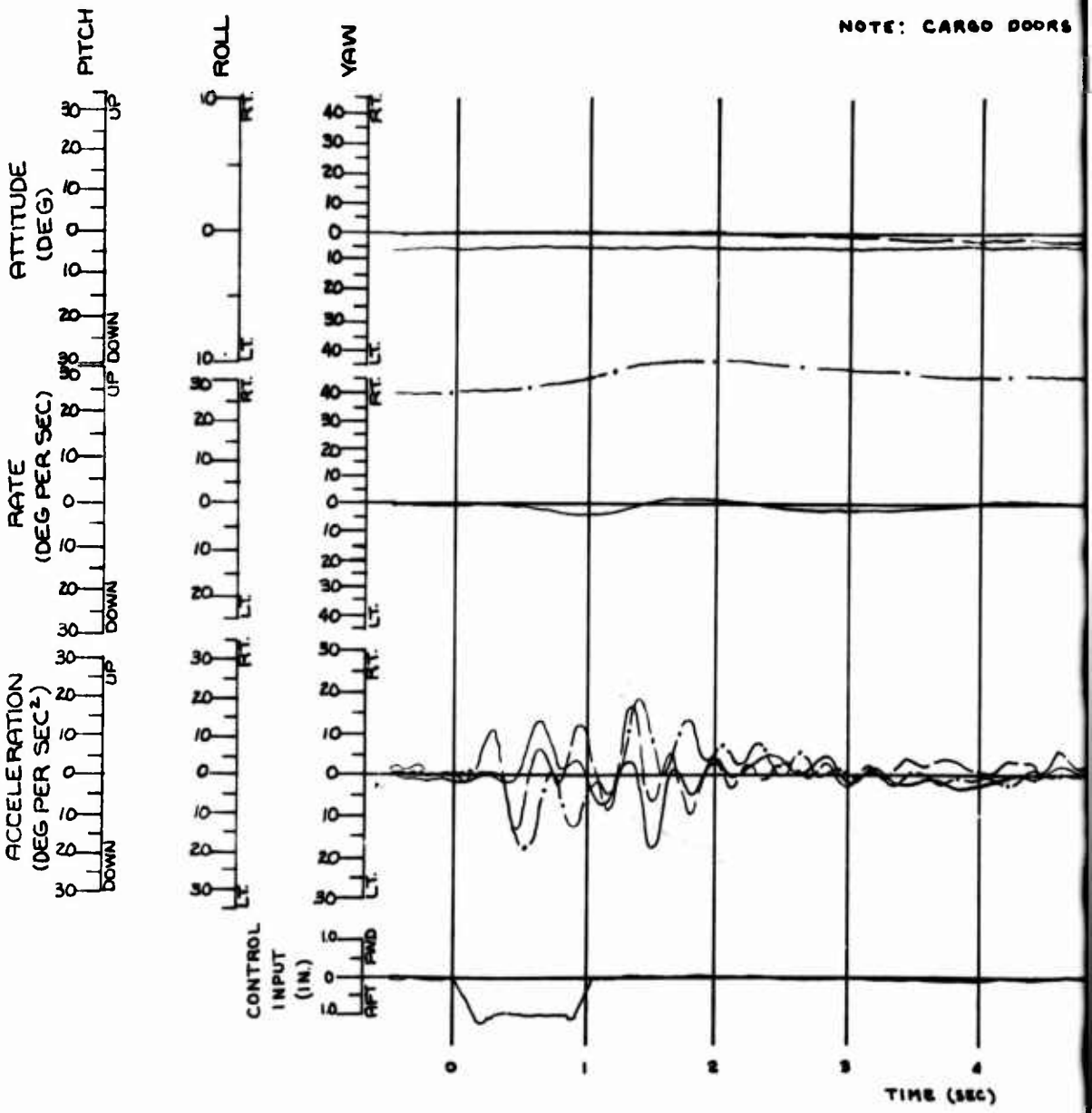


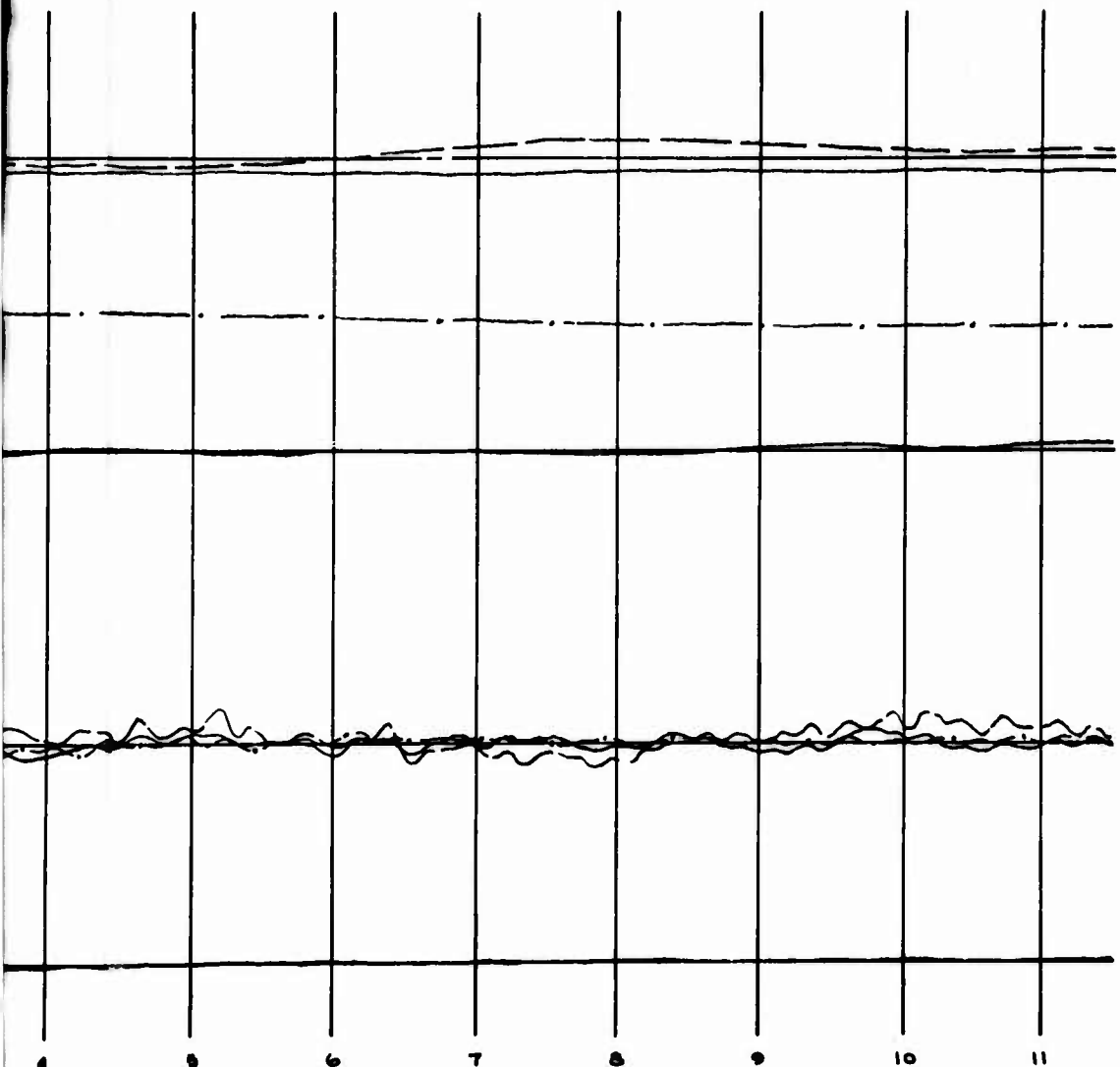
FIGURE 163. RESPONSE TO AN AFT LONG

UH-1N USAF S/N 68-10776
400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	DESCENT

RGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH
ROLL
YAW



AN AFT LONGITUDINAL PULSE

UH-1N USAF
T400-CP-400
LONGITUD
FUSELAG

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,025	5,710	19.1

NOTE: CARGO DOORS CLOSE

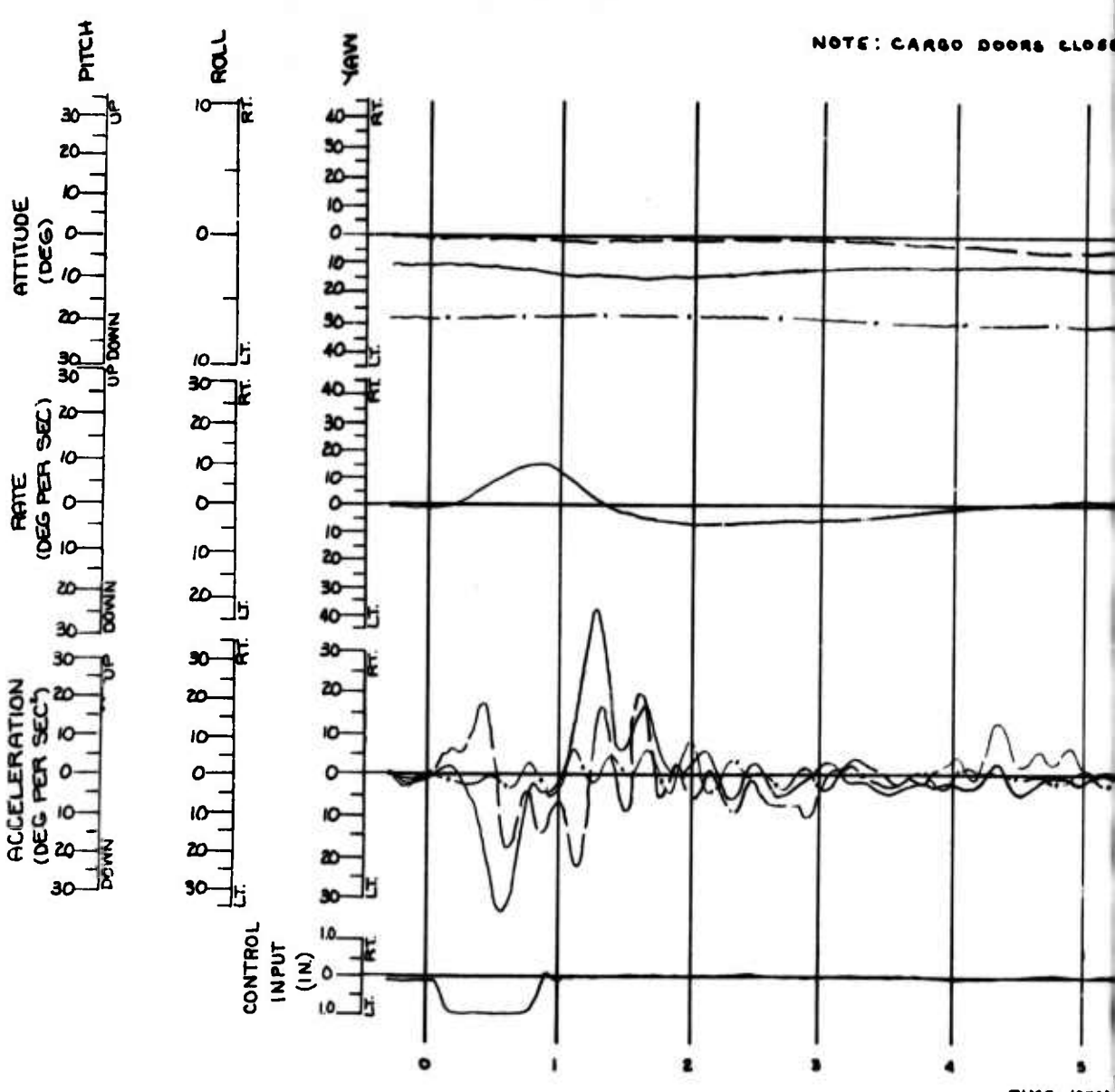


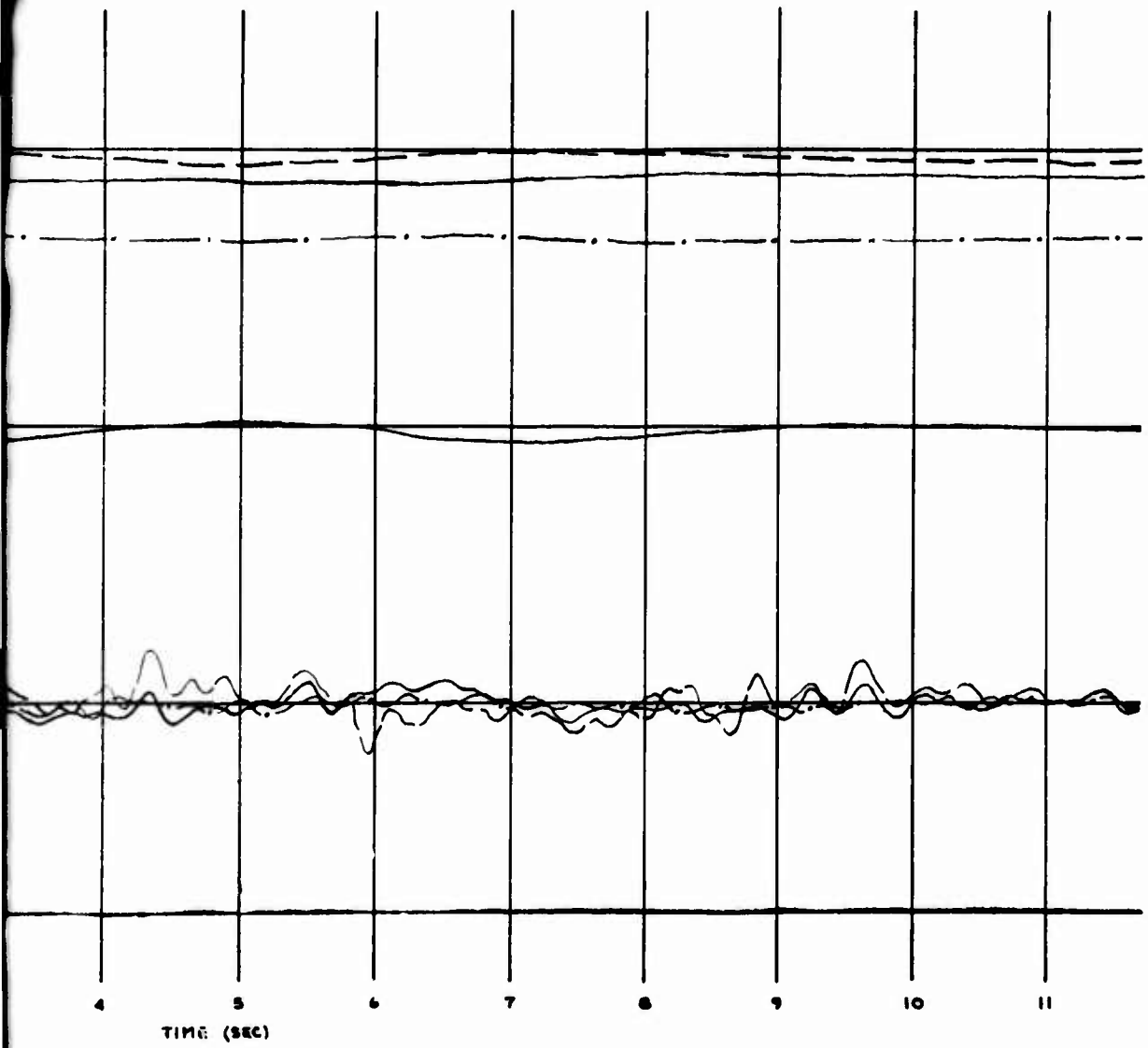
FIGURE 164. RESPONSE TO A LEFT LATERAL

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR TURE)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	312	63	DESCENT

: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW — — — —



12

SE TO A LEFT LATERAL PULSE

UH-1N UE
T400-CP-40

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGIT FUSEL
10,025	3,710	19.1	

NOTE: CARGO DOORS

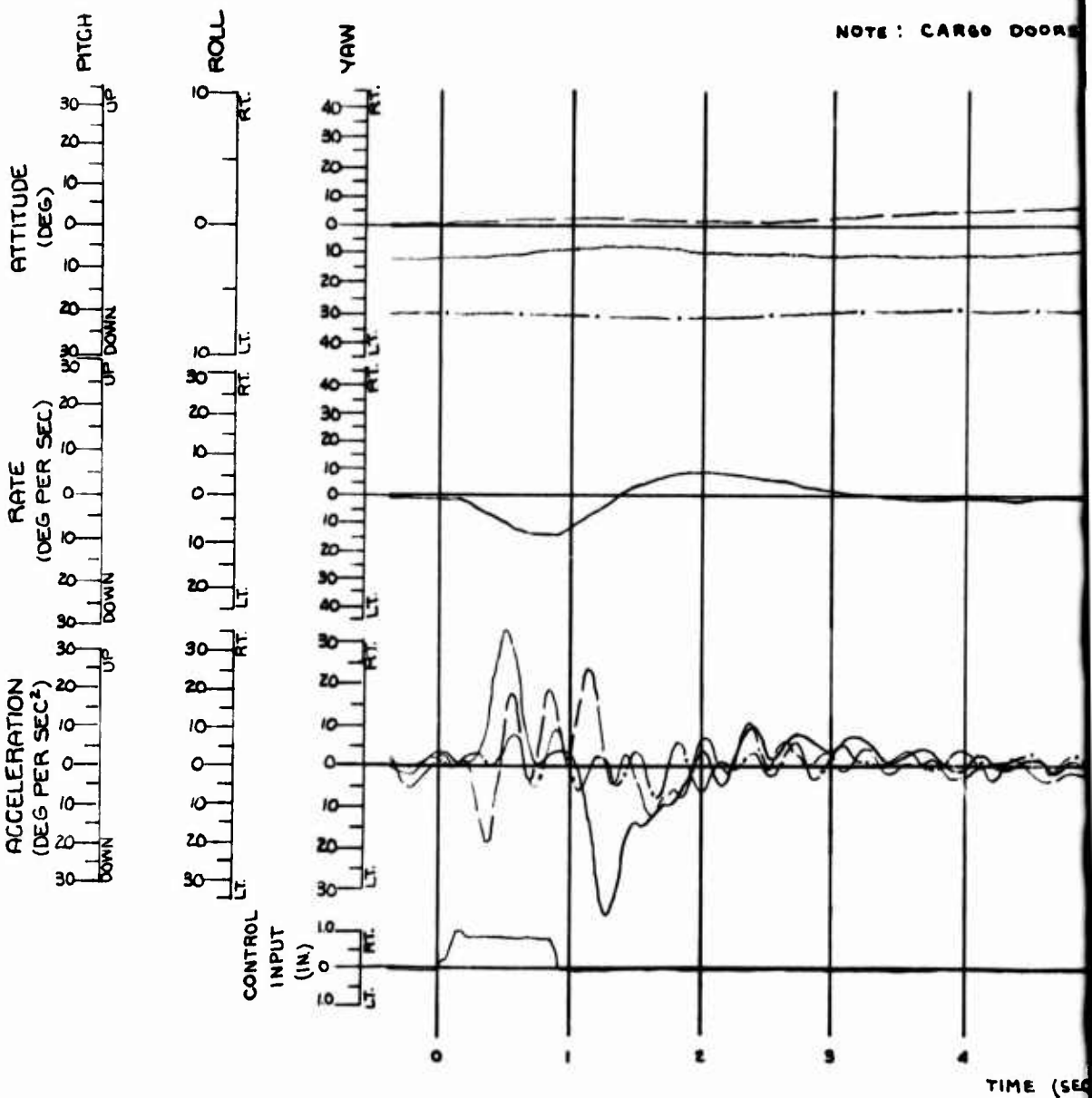


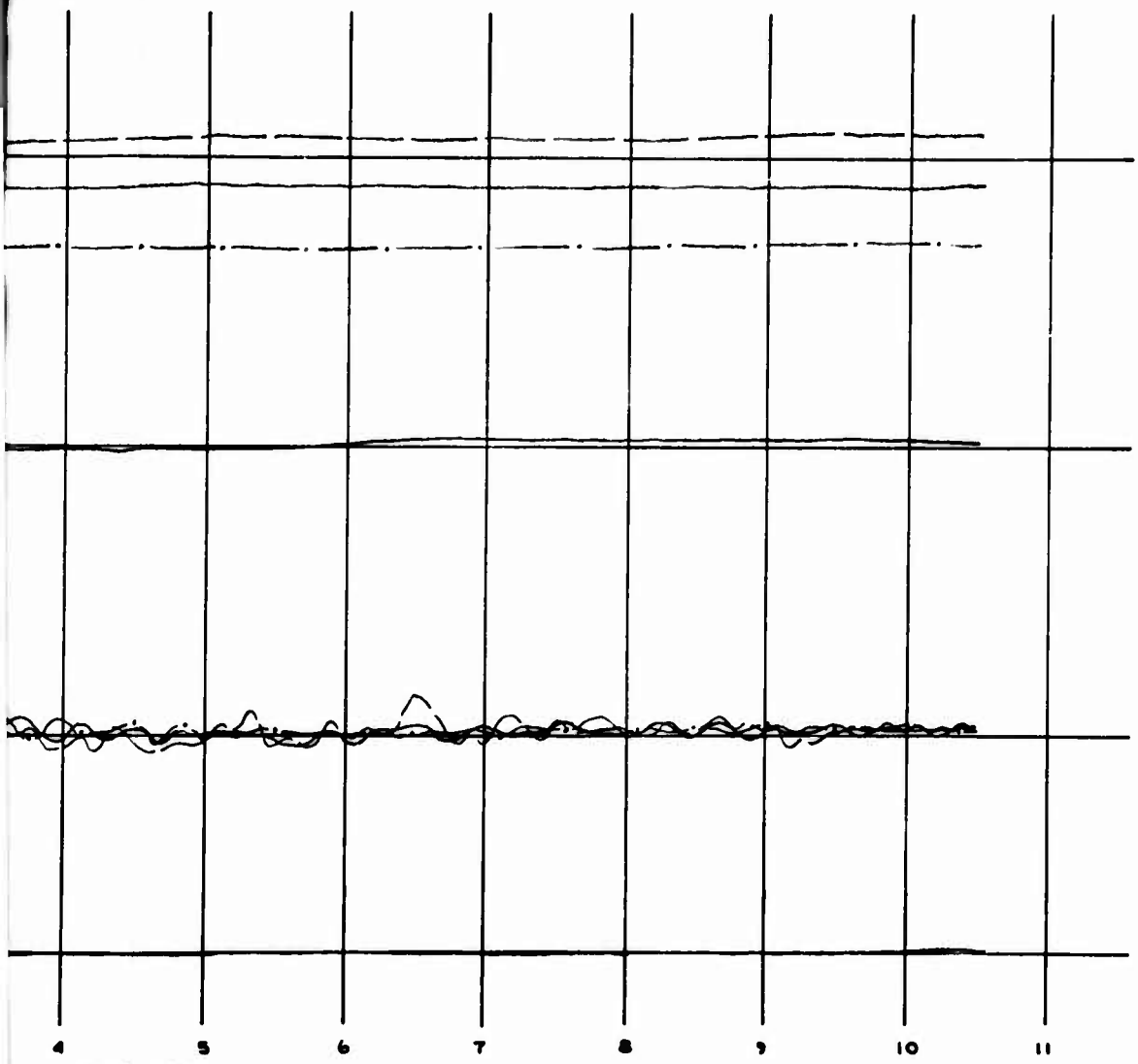
FIGURE 165. RESPONSE TO A RIGHT LAT

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	DESCENT

CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH — · — · — · —
ROLL ————————
YAW — — — — —



TO A RIGHT LATERAL PULSE

12

UH-1N U
T400-CP-
LONG
PU

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,025	3,710	19.1

NOTE: CARGO DOORS

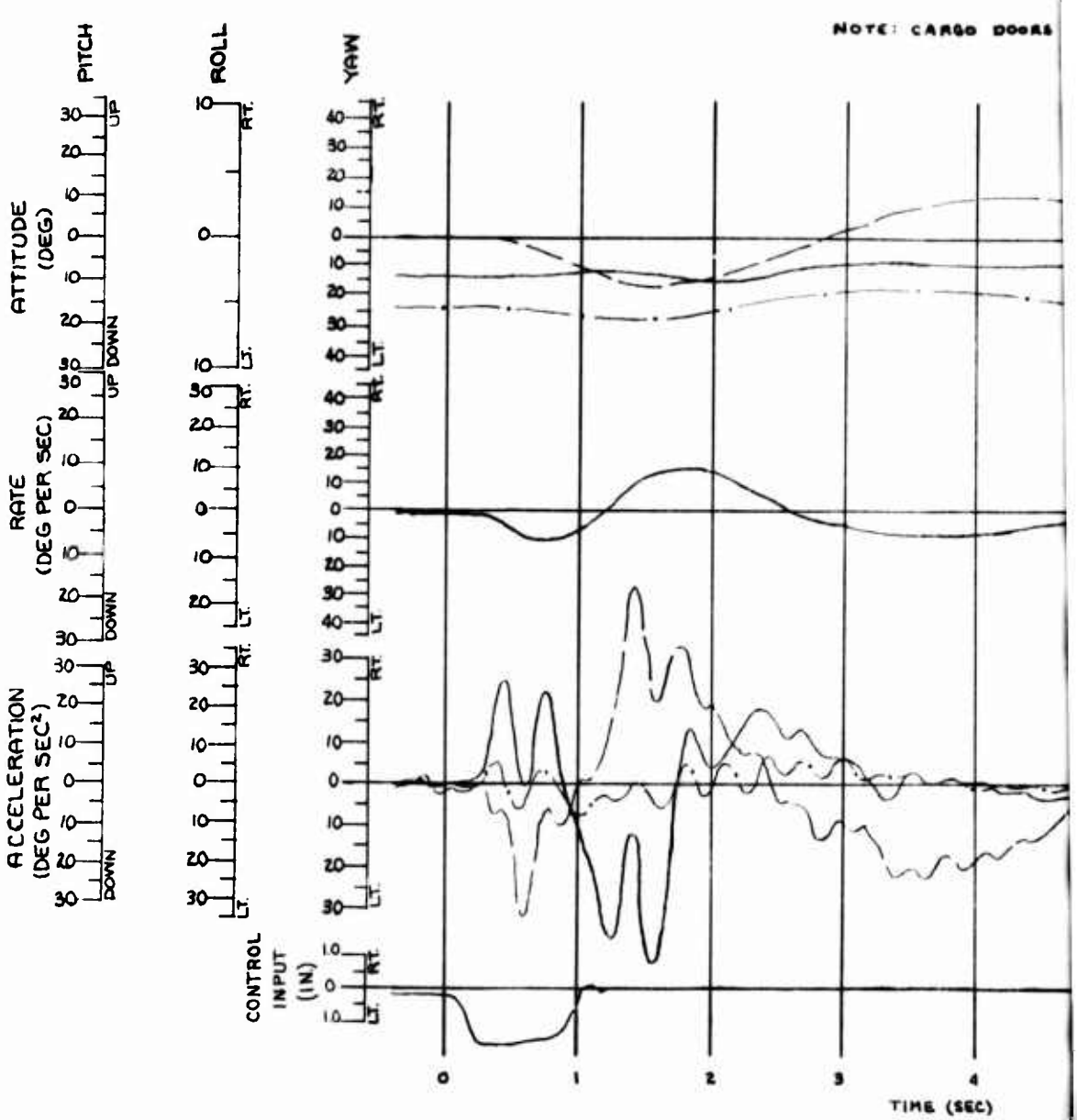


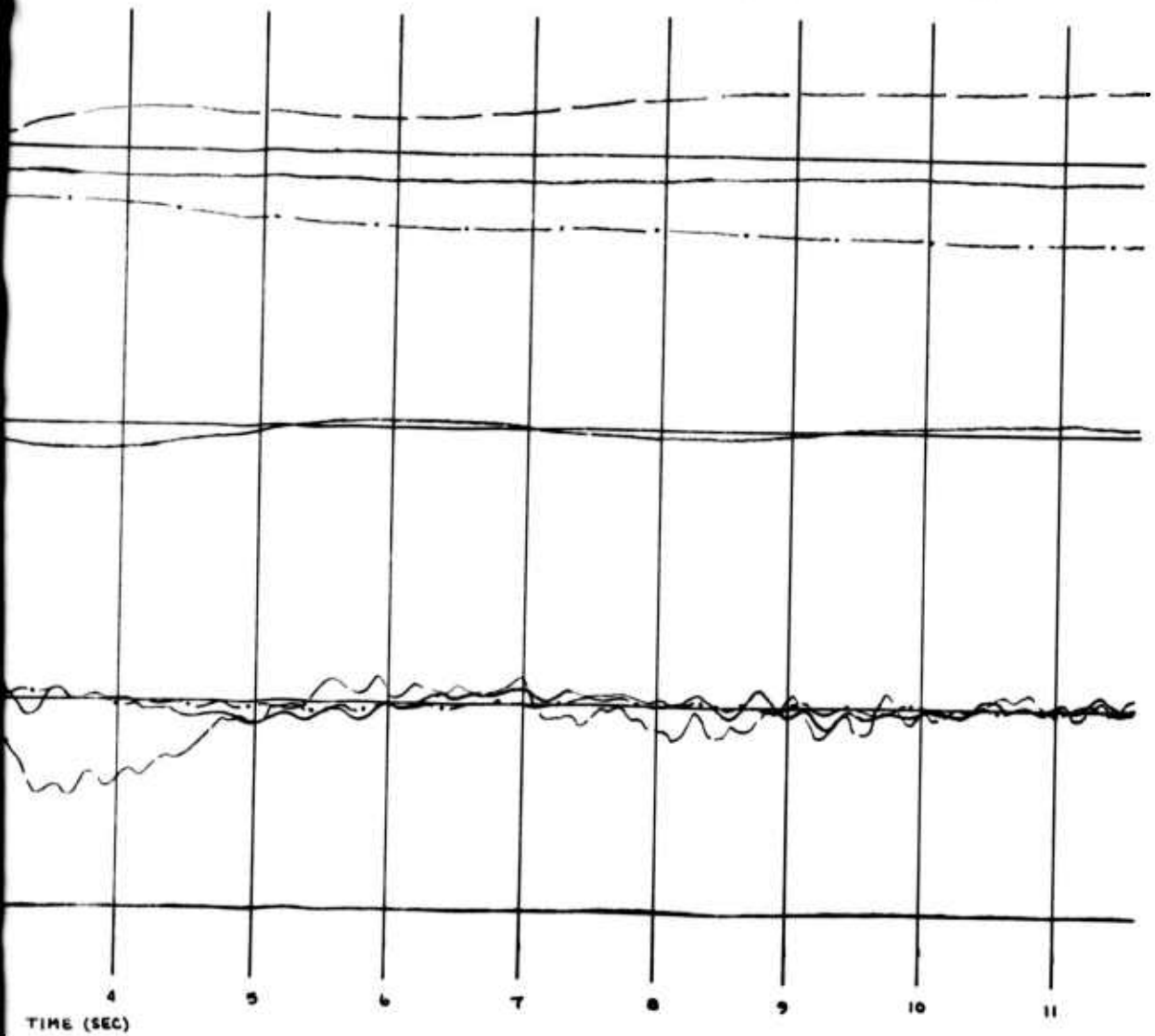
FIGURE 166. RESPONSE TO A LEFT

UH-1N USAF S/N 68 10776
T400-CP-400 POWER PACKAGE

AIR ATURE C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	312	63	DESCENT

TE: CARGO DOORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW — — — —



2

SE TO A LEFT DIRECTIONAL PULSE

UH-1N USAF
T400-CP-400
LONGITU
FUSELA

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,025	3,710	19.1

NOTE: CARGO DOORS CLOSE

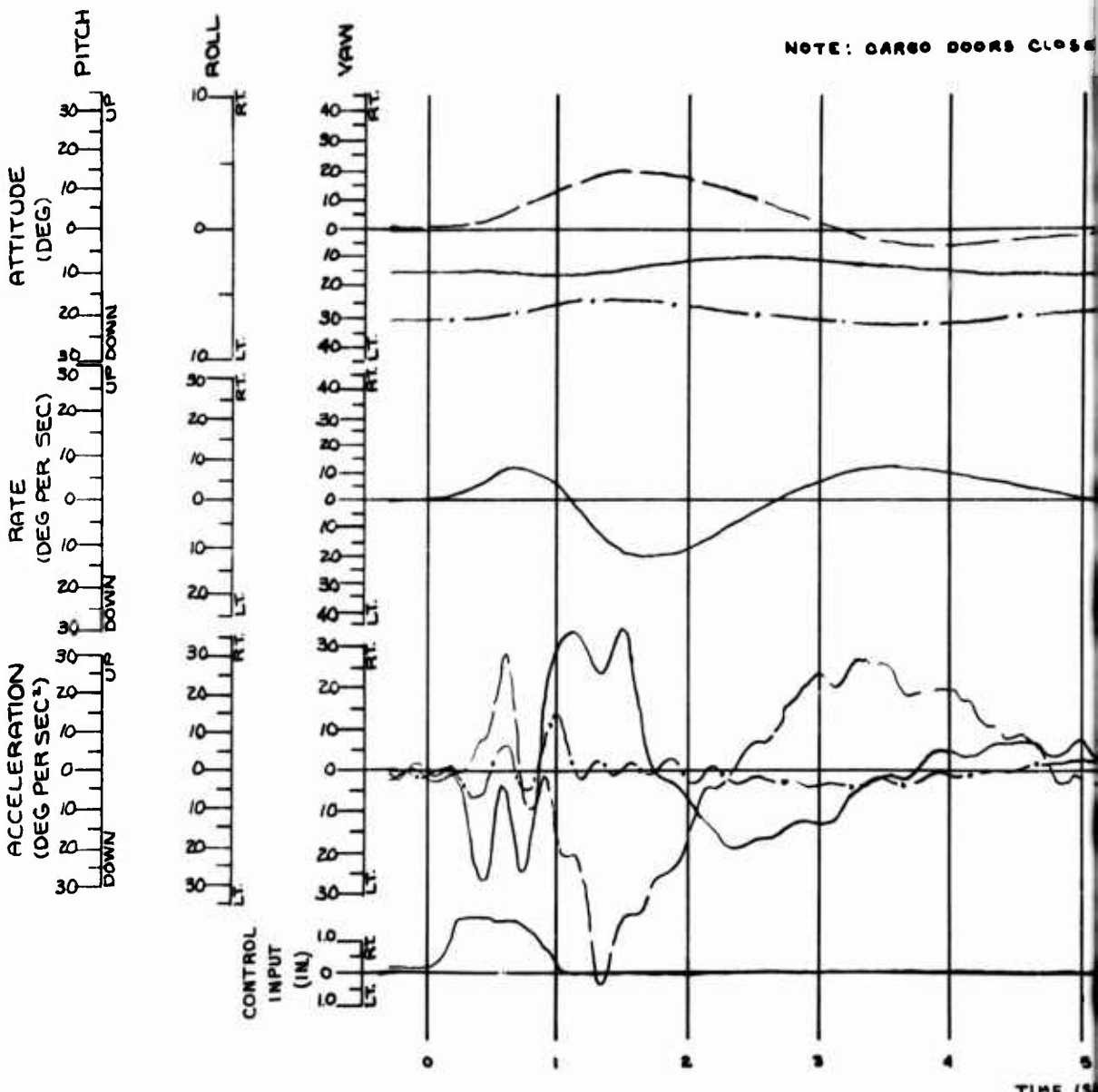


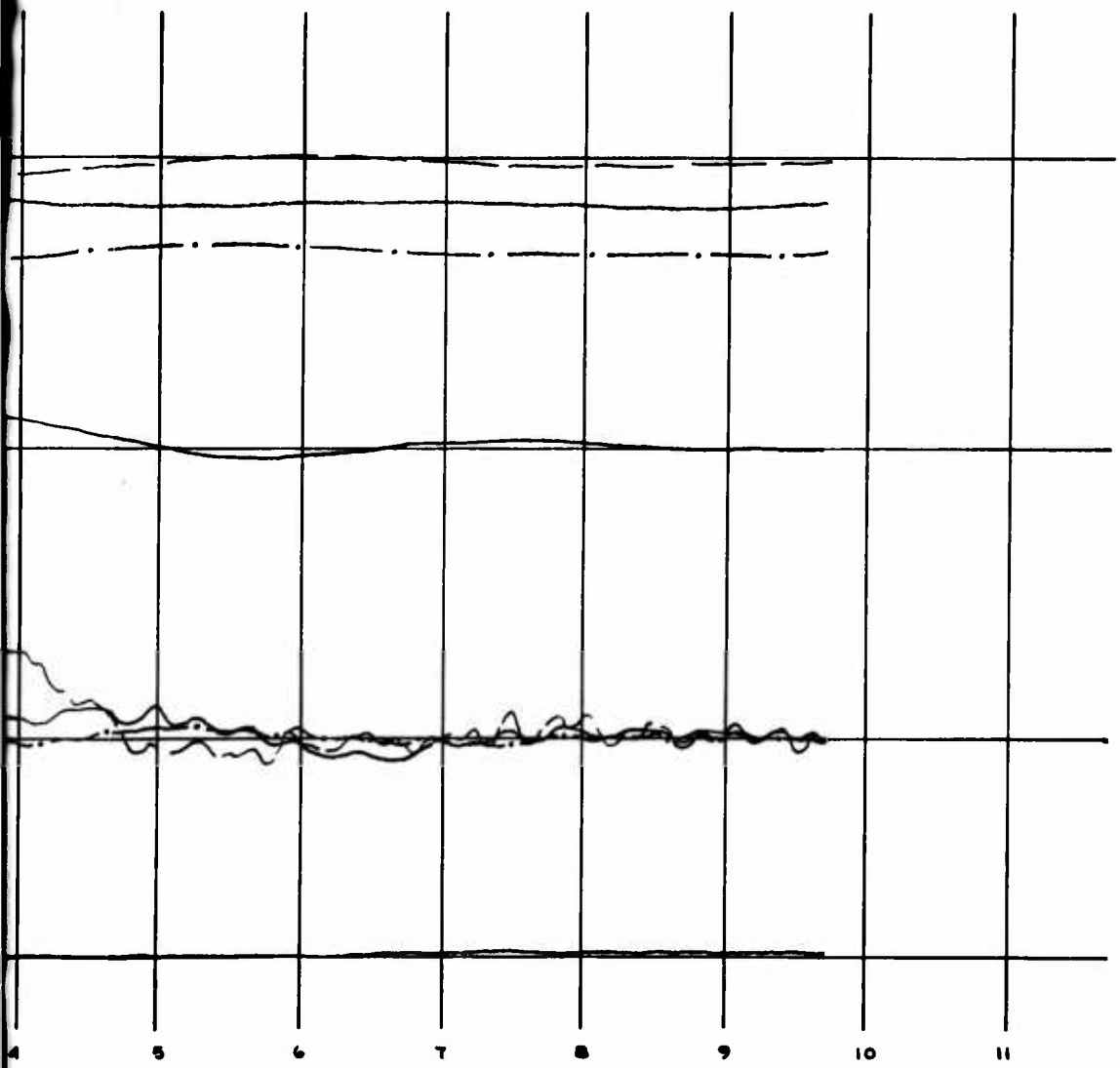
FIGURE 167. RESPONSE TO A RIGHT DIR

UH-1N USAF S/N 68-10776
400-CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	65	DESCENT

DOORS CLOSED, NO EXTERNAL STORES.

PITCH —·—·—·—
ROLL ————————
YAW — — — — —



A RIGHT DIRECTIONAL PULSE

UH-IN U
T400-CP-4

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONG FUSE
10,025	3,710	19.1	

NOTE : CARGO DOORS CLOSED, NO EXTERNAL S

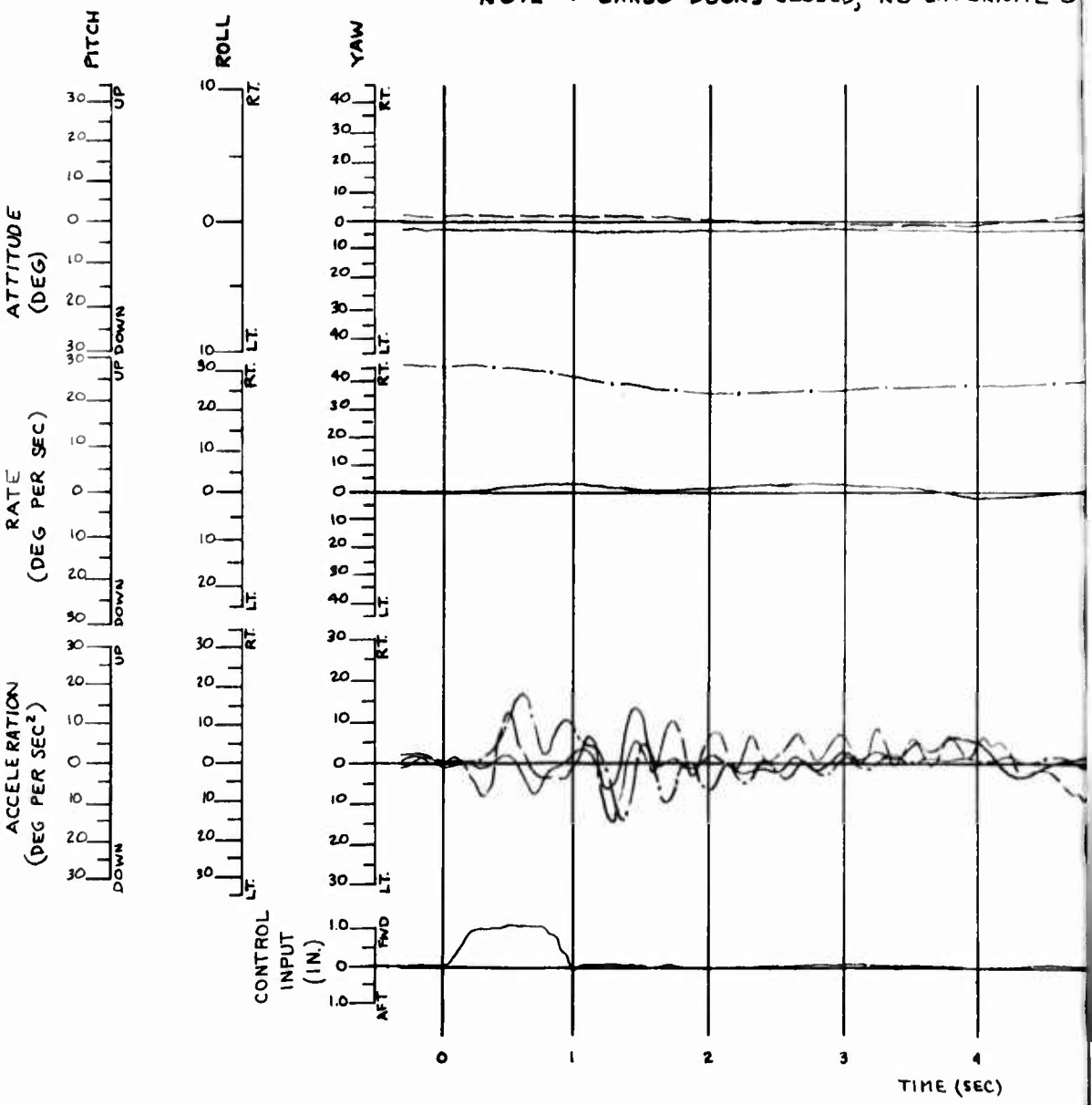


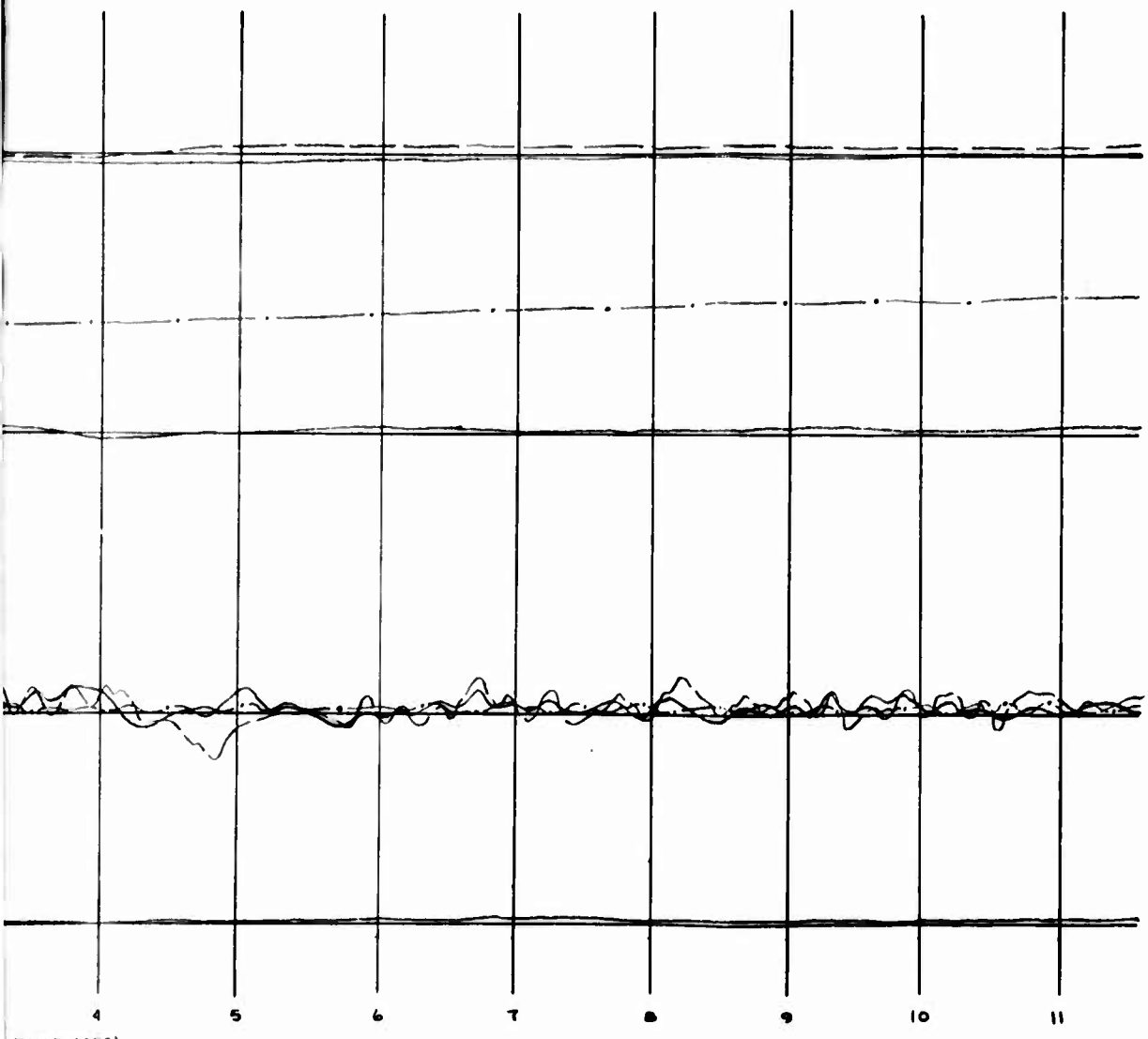
FIGURE 168. RESPONSE TO A FORWA

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

AIR ATURE)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	312	63	AUTOROTATION

O EXTERNAL STORES.

PITCH —·—·— ROLL ——— YAW — — —



12

E TO A FORWARD LONGITUDINAL PULSE

UH-1N USAF
T400-CP-400

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUD FUSELA (IN.)
10,025	3,710	19.1	136

NOTE : CARGO DOORS CLOSED, NO EXTERNAL STOR

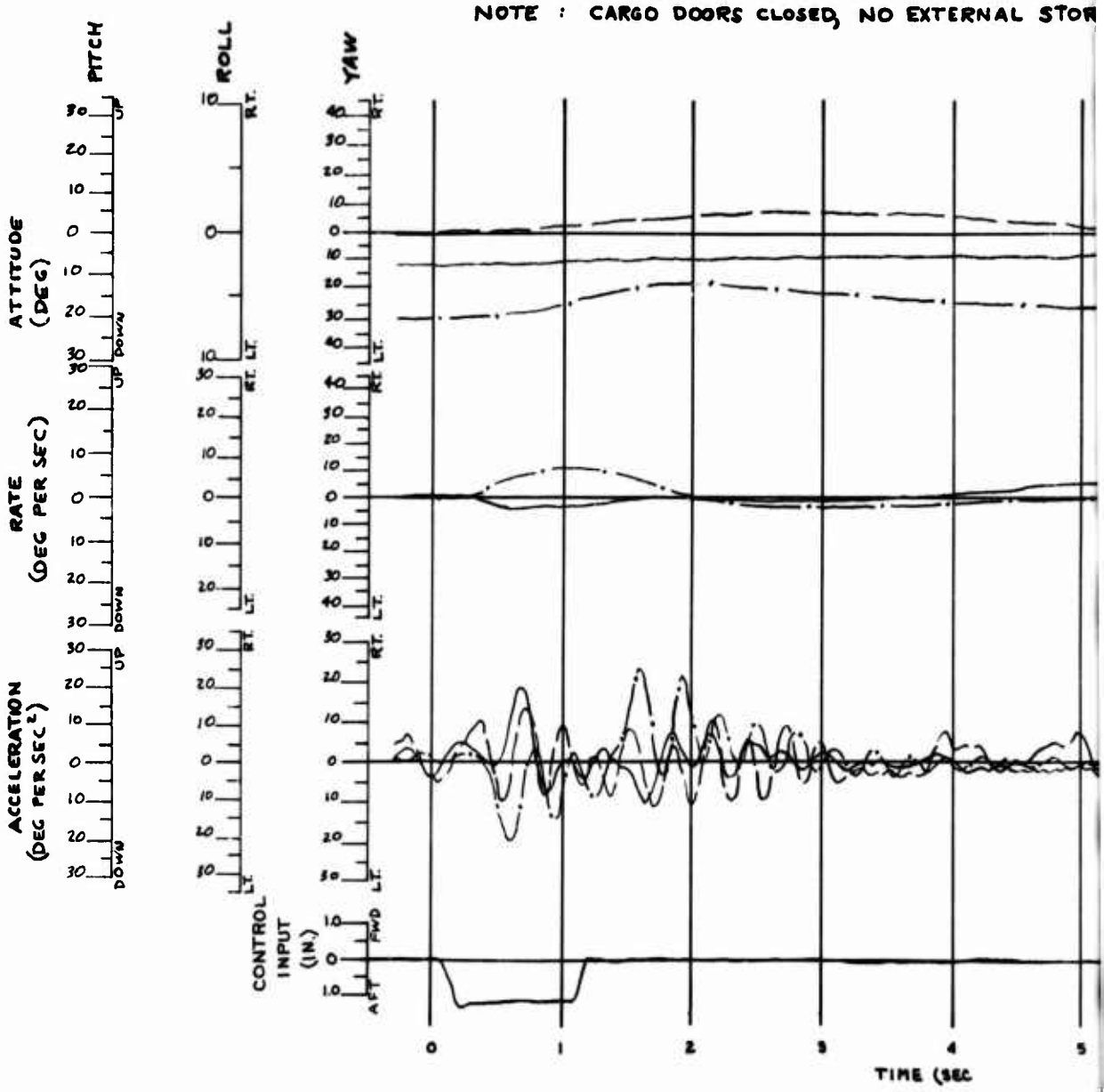


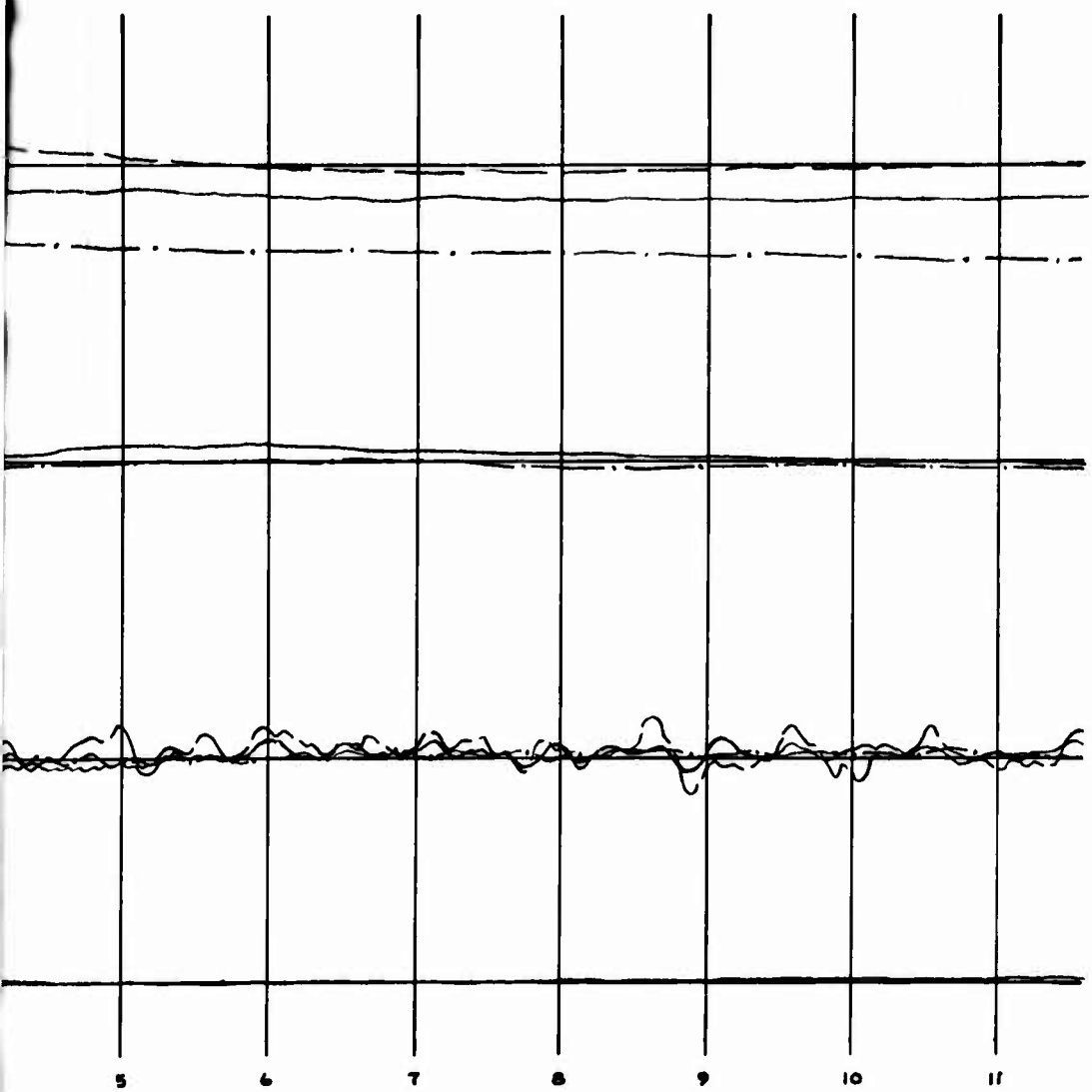
FIGURE 169. RESPONSE TO AN AFT LONG

N USAF S/N 68-10776
CP-400 POWER PACKAGE

LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	AUTOROTATION

AL STORES.

PITCH —·—·— ROLL ——— YAW — — —



AFT LONGITUDINAL PULSE

UH-IN
T400-CP-
LON
FU

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)
10,025	3,710	19.1

NOTE CARGO DOORS CLOSED, NO EXTERNAL

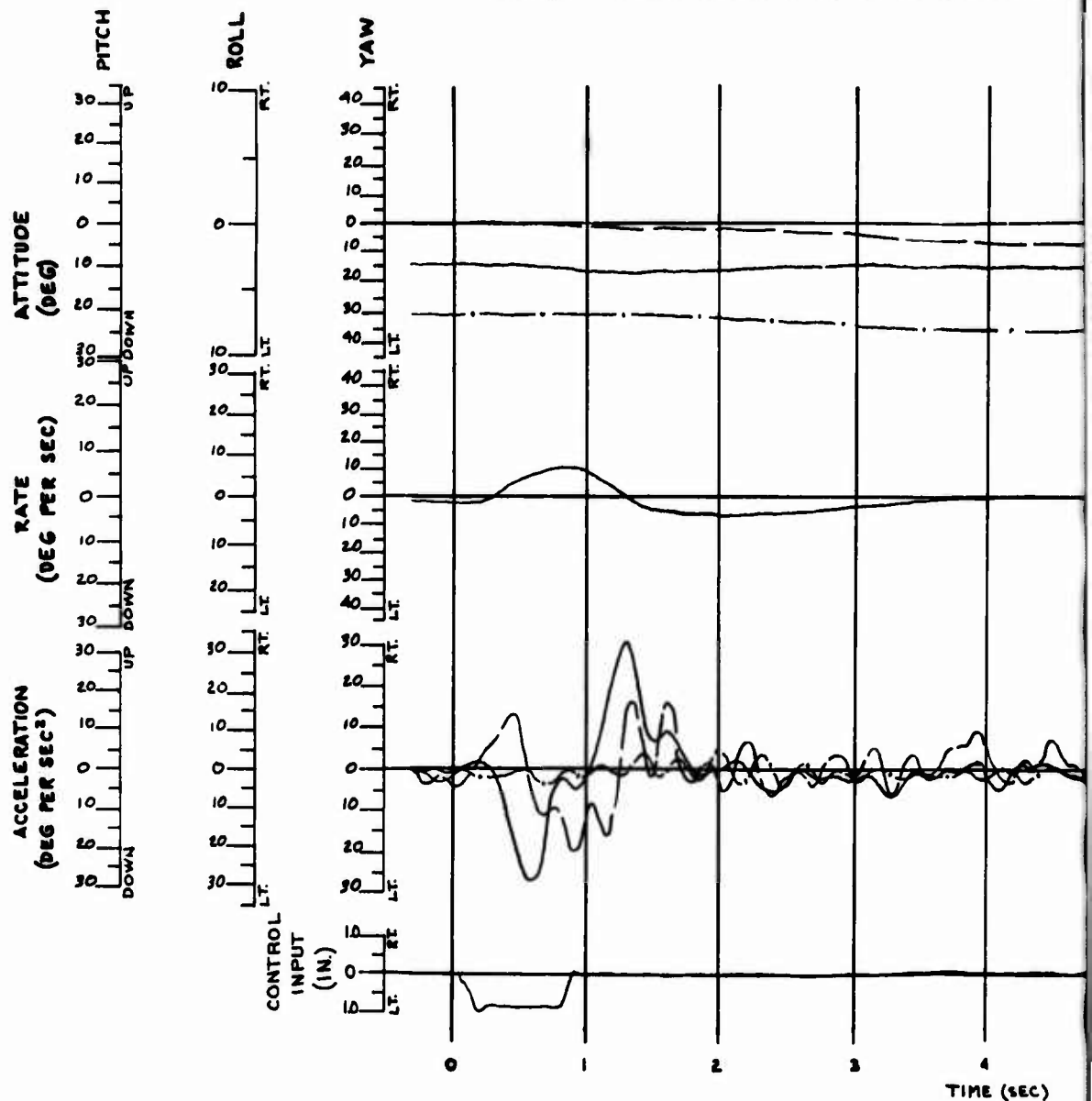
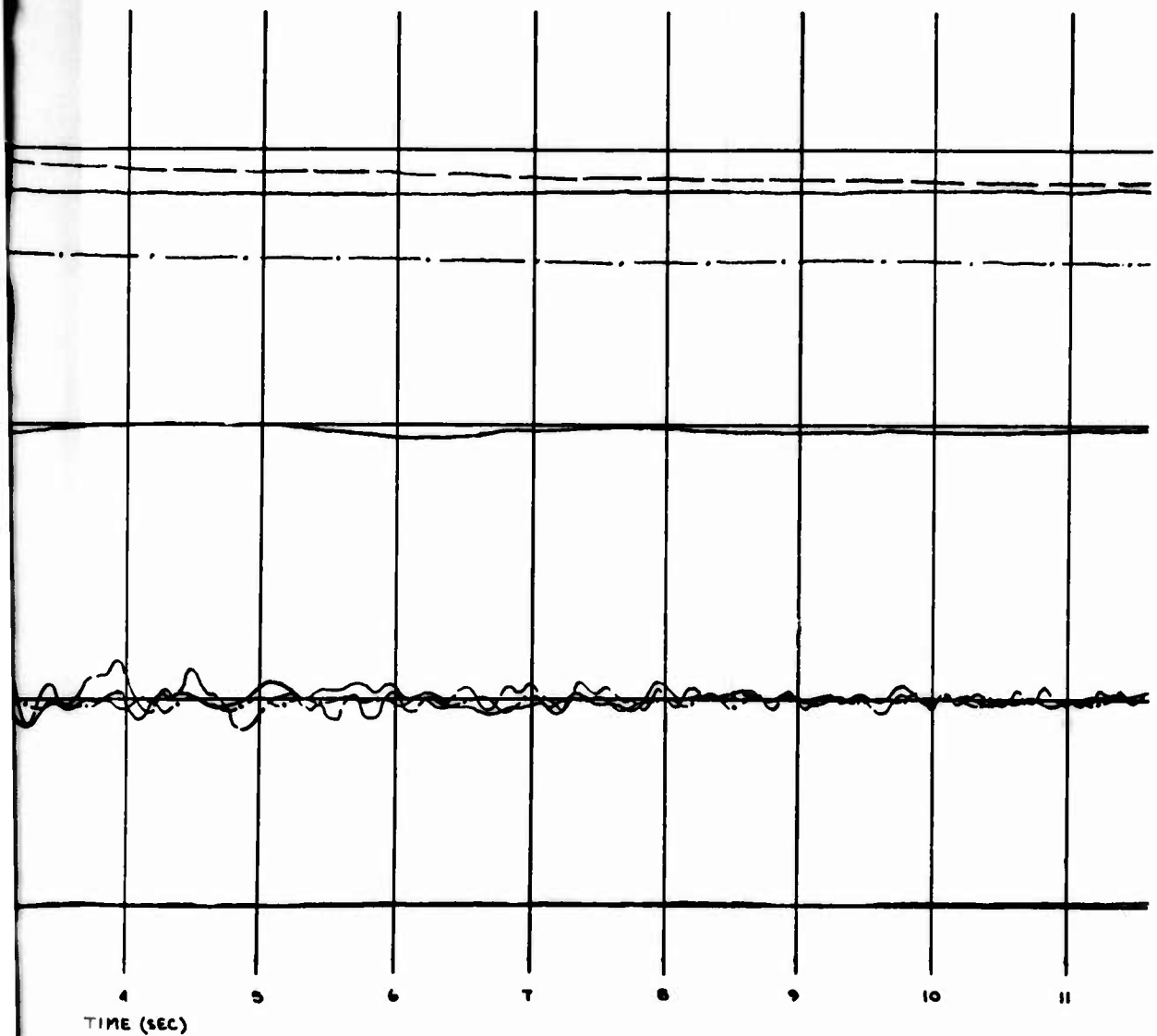


FIGURE 170. RESPONSE TO A LEFT L

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

E AIR RATURE C)	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	198.7	312	63	AUTOROTATION

NO EXTERNAL STORES PITCH —·—·— ROLL ——— YAW — — —



NSE TO A LEFT LATERAL PULSE

12

UH-IN USAF S/N 68-10
T400-CP-400 POWER PA

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDINAL C.G. L FUSELAGE STATIO (IN.)
10,025	3,710	19.1	138.7

NOTE : CARGO DOORS CLOSED, NO EXTERNAL STOR

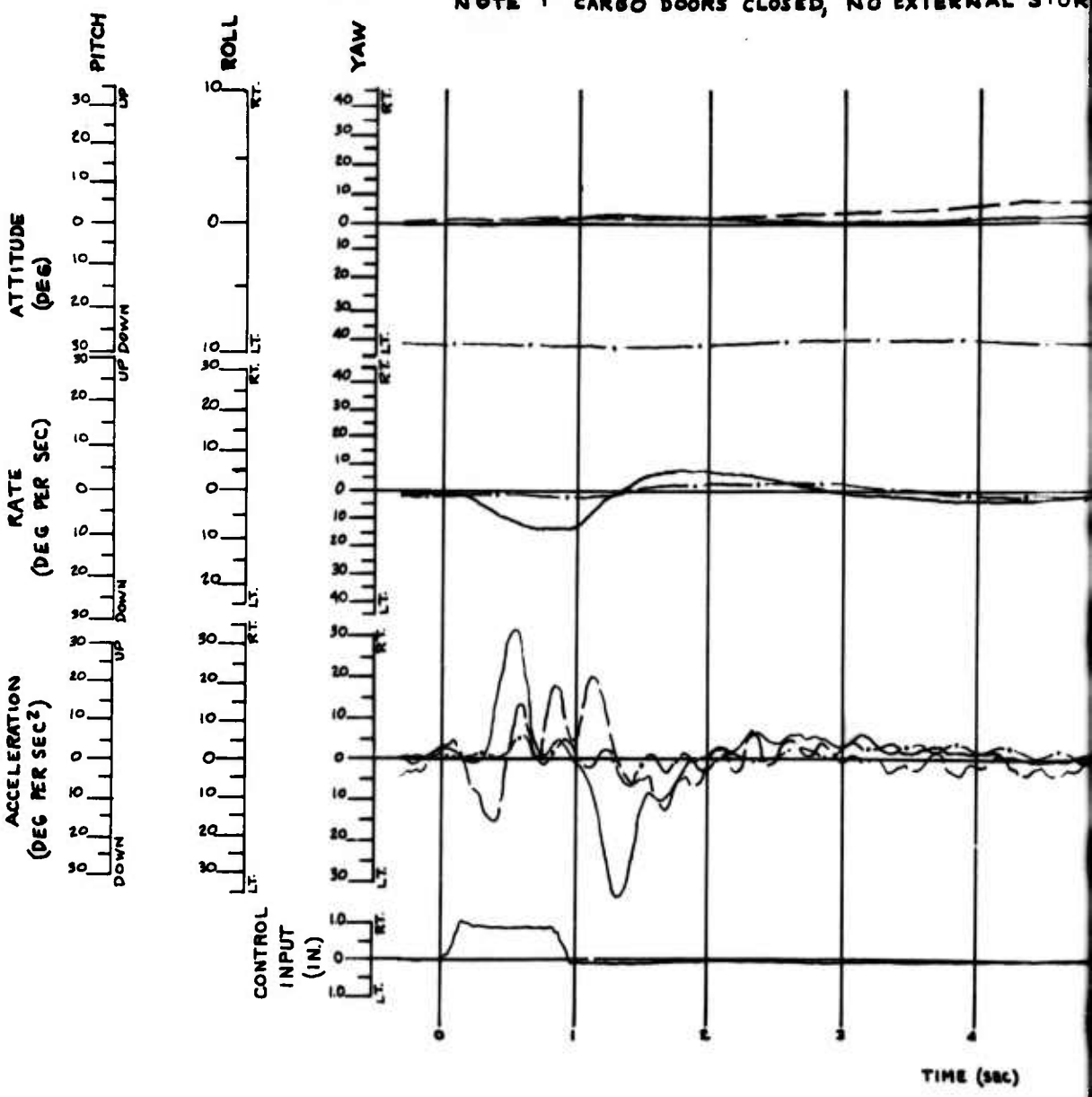


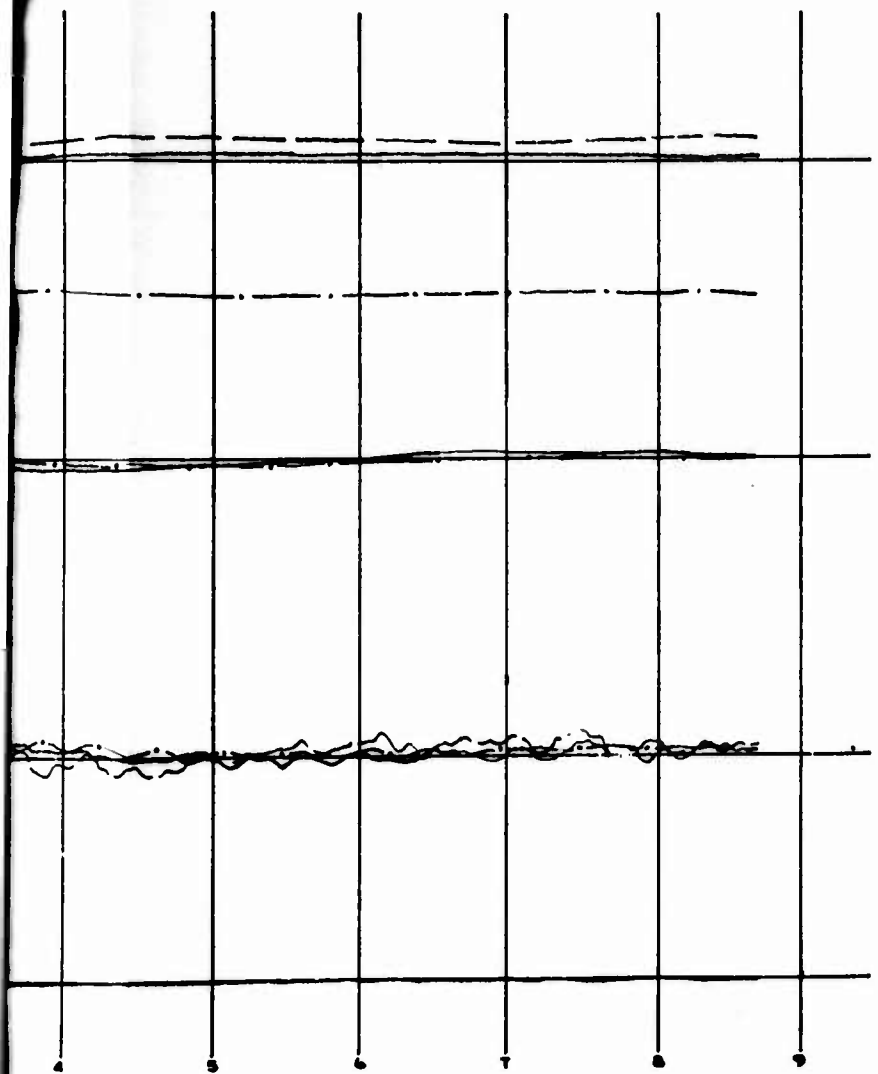
FIGURE 171. RESPONSE TO A RIGHT LAT

S/N 68-10776
POWER PACKAGE

INAL C.G. LOCATION E STATION	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
.7	312	63	AUTOROTATION

RNAL STORES.

PITCH — · — · — ROLL ——— YAW — — —



TIME (SEC)

O A RIGHT LATERAL PULSE

UH-IN USA
T400-CP-40

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGIT FUSEL (IN)
10,025	3,710	19.1	

NOTE : CARGO DOORS CLOSED, NO EXTERNAL STO

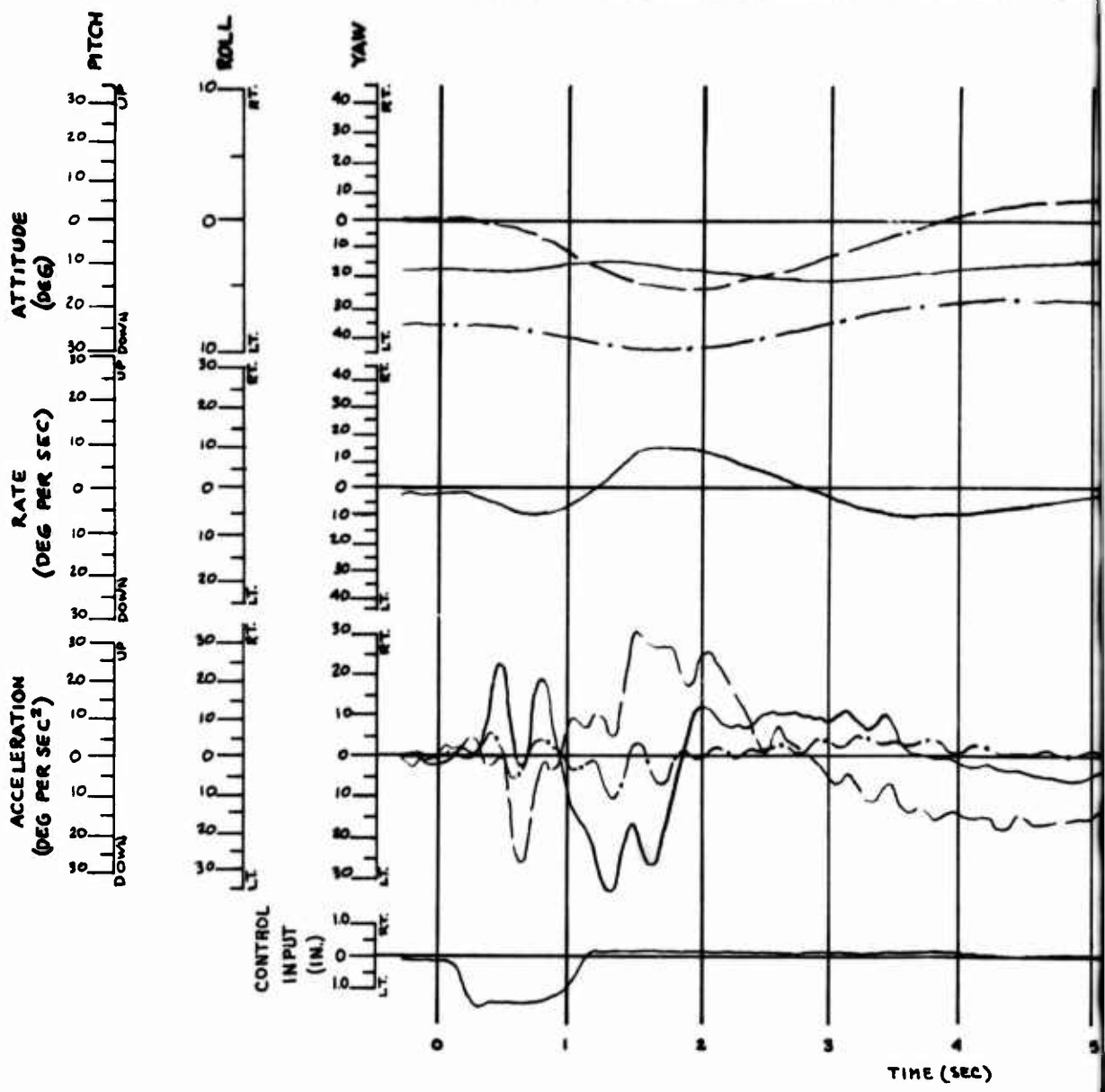


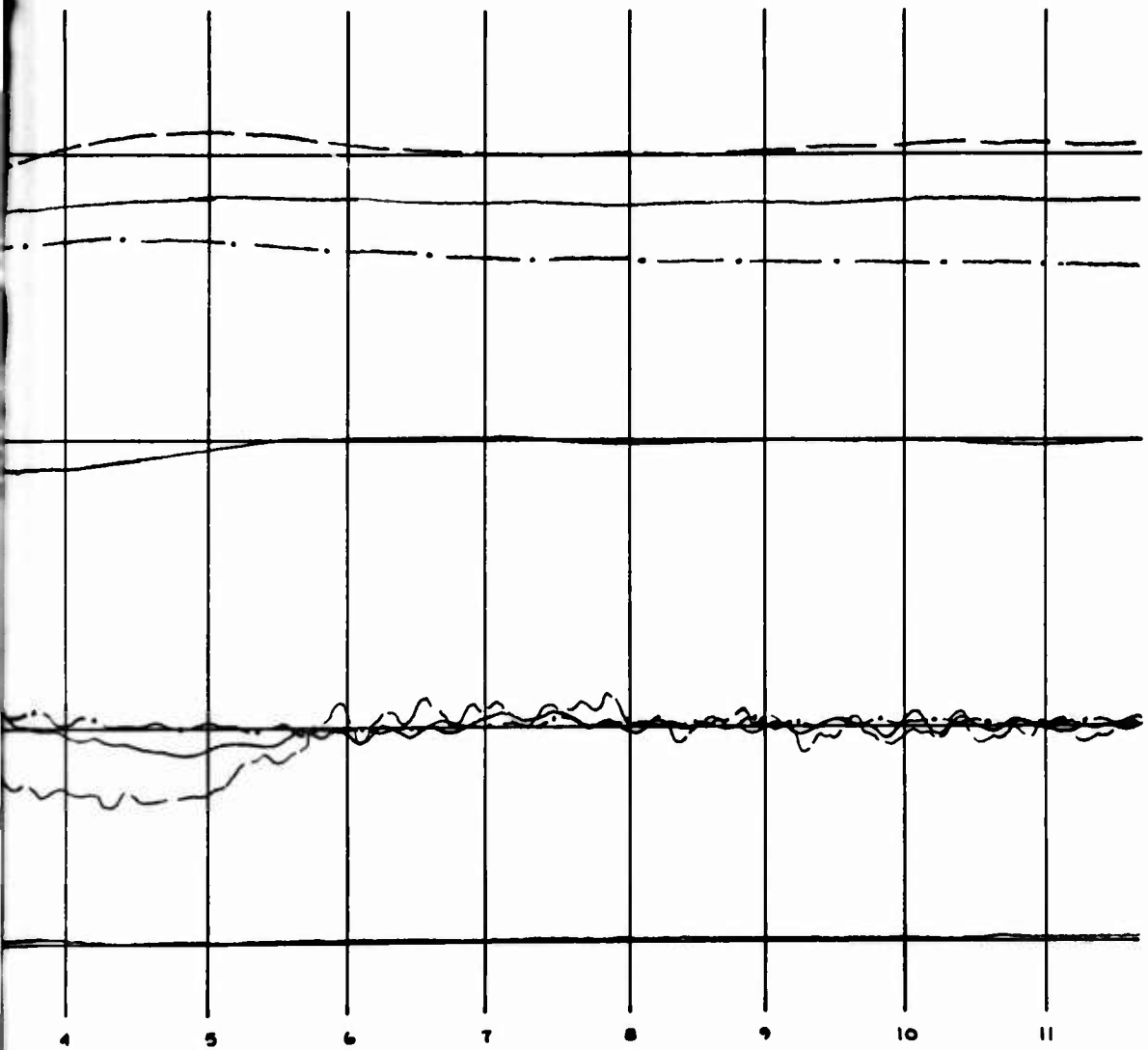
FIGURE 172. RESPONSE TO A LEFT DI

UH-1N USAF S/N 68-10776
T400-CP-400 POWER PACKAGE

R URE	LONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
	138.7	312	63	AUTOROTATION

EXTERNAL STORES.

PITCH —·—·—
ROLL ———
YAW — — —



IME (SEC)

E TO A LEFT DIRECTIONAL PULSE

12

GROSS WEIGHT (LB)	PRESSURE ALTITUDE (FT)	OUTSIDE AIR TEMPERATURE (DEG C)	LONGITUDI FUSELAG (IN.)
10,025	3,710	19.1	136

NOTE : CARGO DOORS CLOSED, NO EXTERNAL STORE

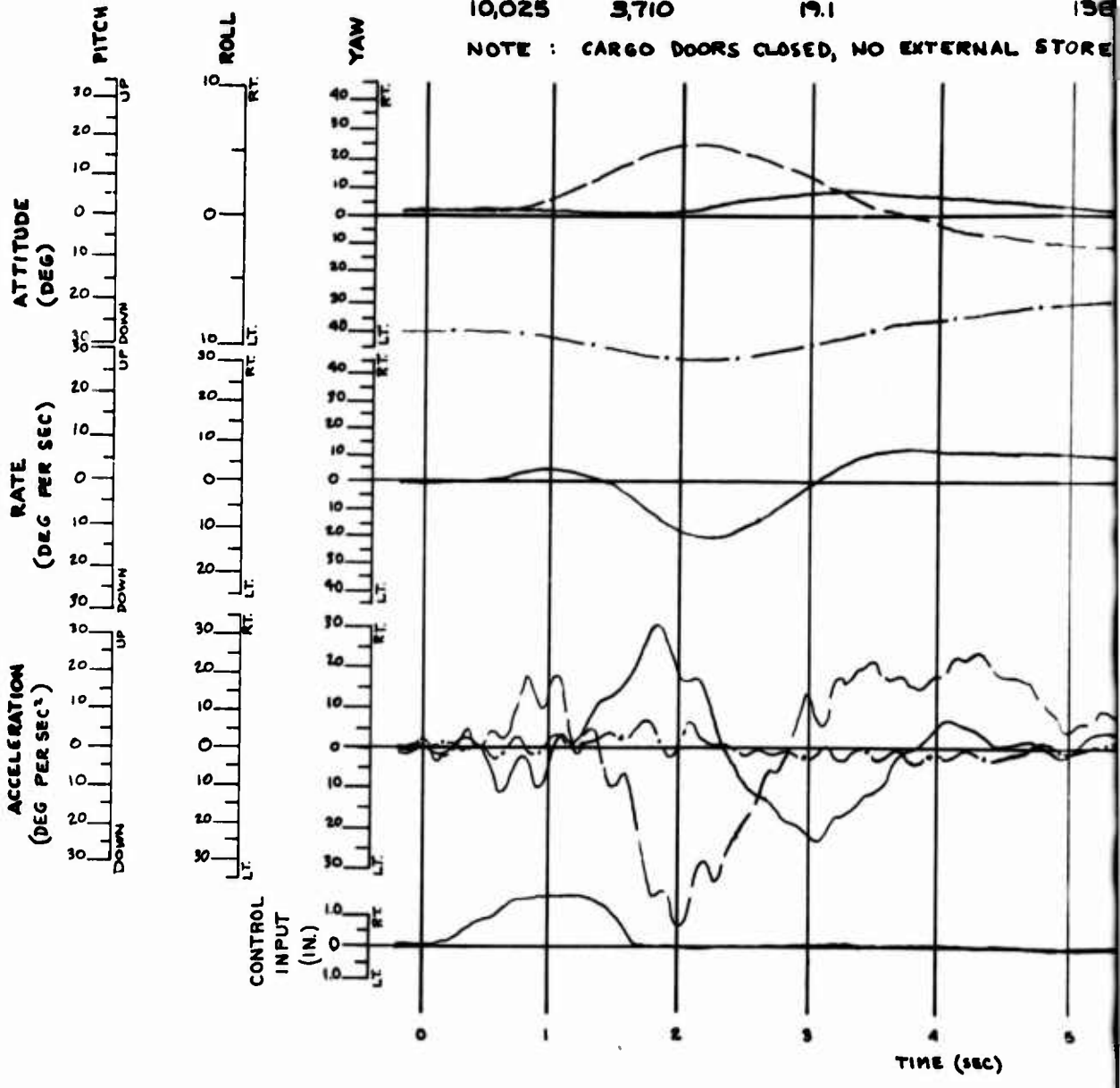


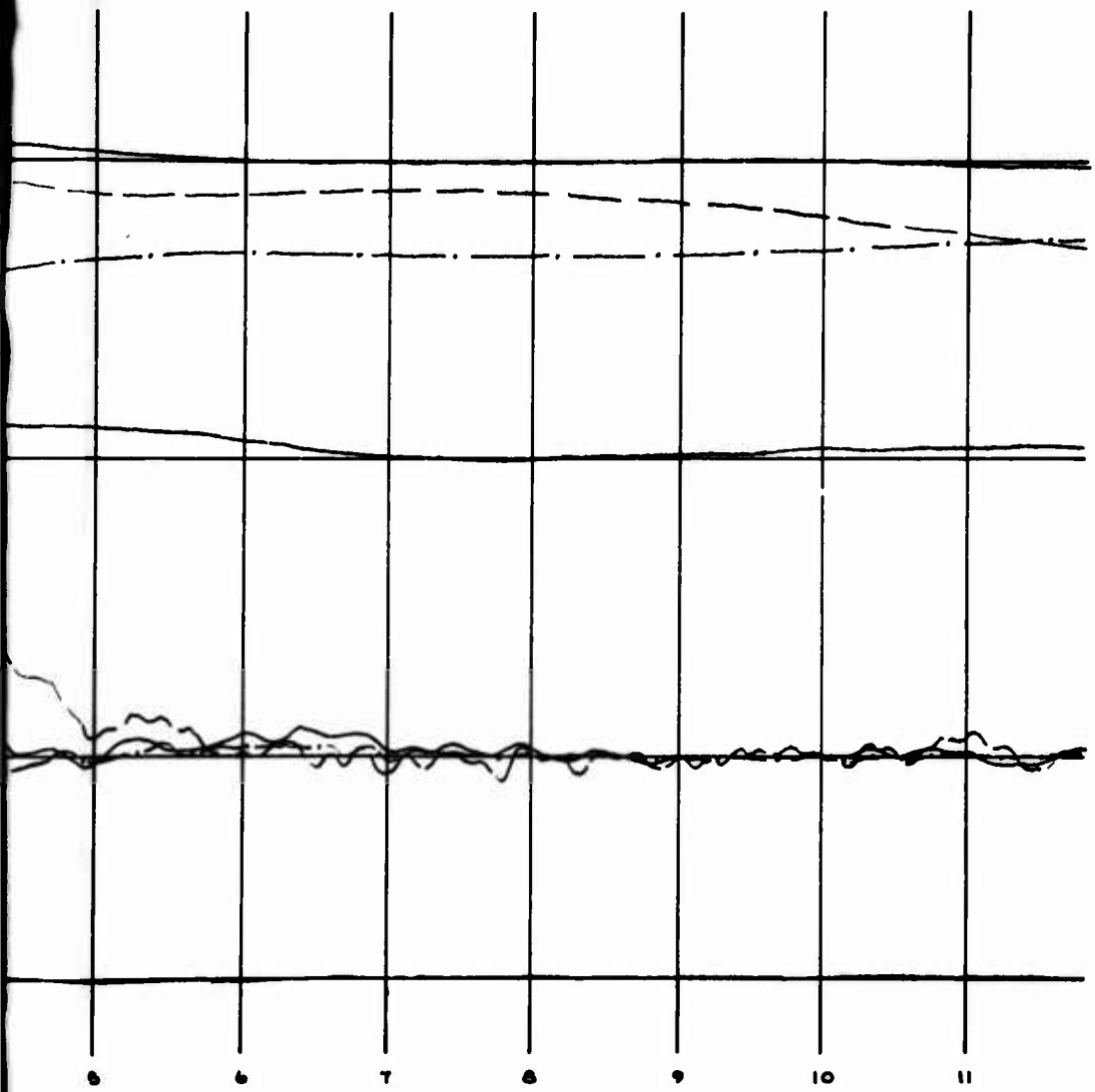
FIGURE 173. RESPONSE TO A RIGHT DIREC

N USAF S/N 68-10776
CP-400 POWER PACKAGE

ONGITUDINAL C.G. LOCATION FUSELAGE STATION (IN.)	ROTOR SPEED (RPM)	AIRSPEED (KCAS)	FLIGHT CONDITION
138.7	312	63	AUTOROTATION

L STORES.

PITCH —·—·— ROLL ——— YAW – – –



)

GHT DIRECTIONAL PULSE

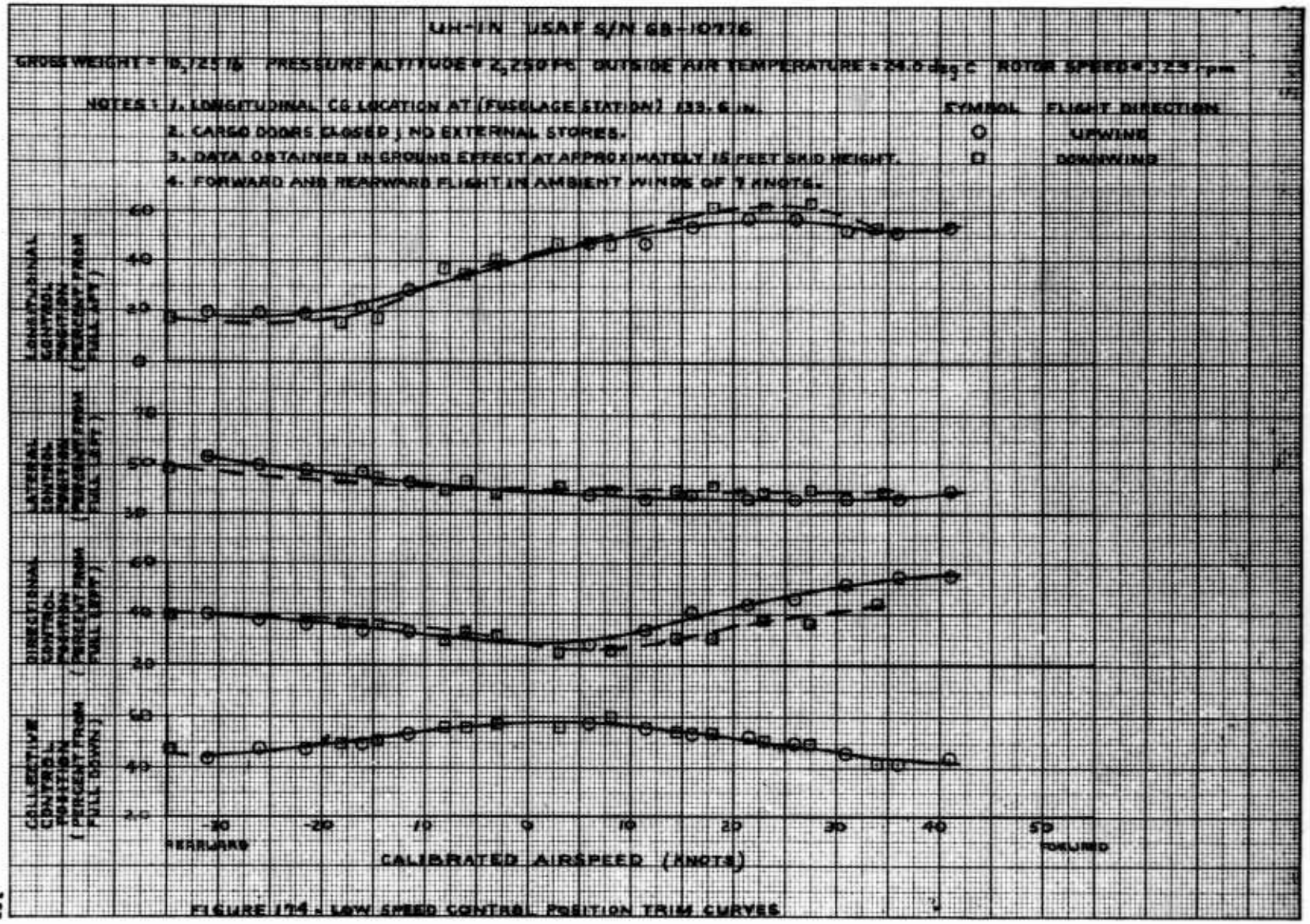


FIGURE 174 - LOW SPEED CONTROL POSITION TRIM CURVES

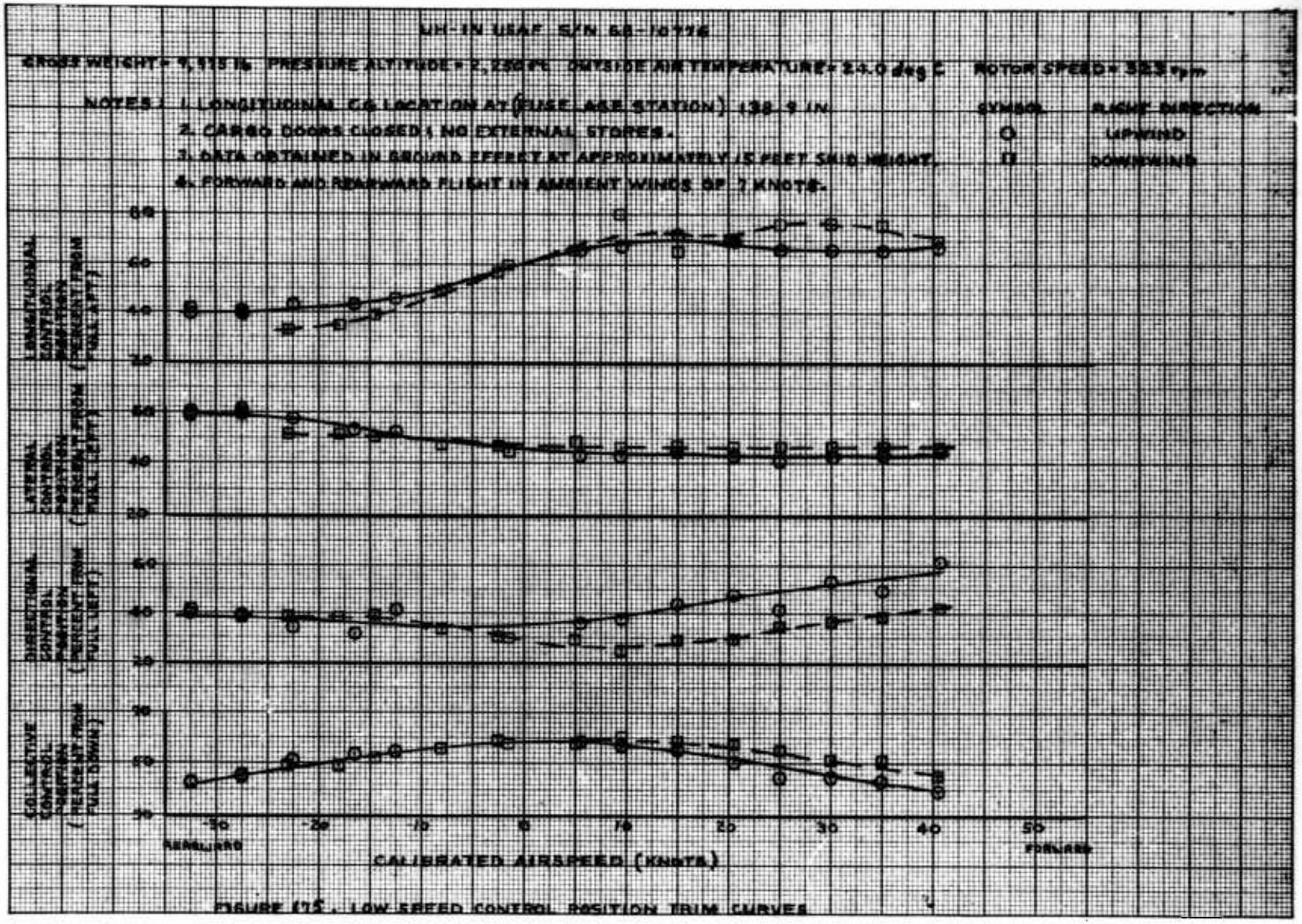


FIGURE 175. LOW SPEED CONTROL POSITION TRIM CURVES

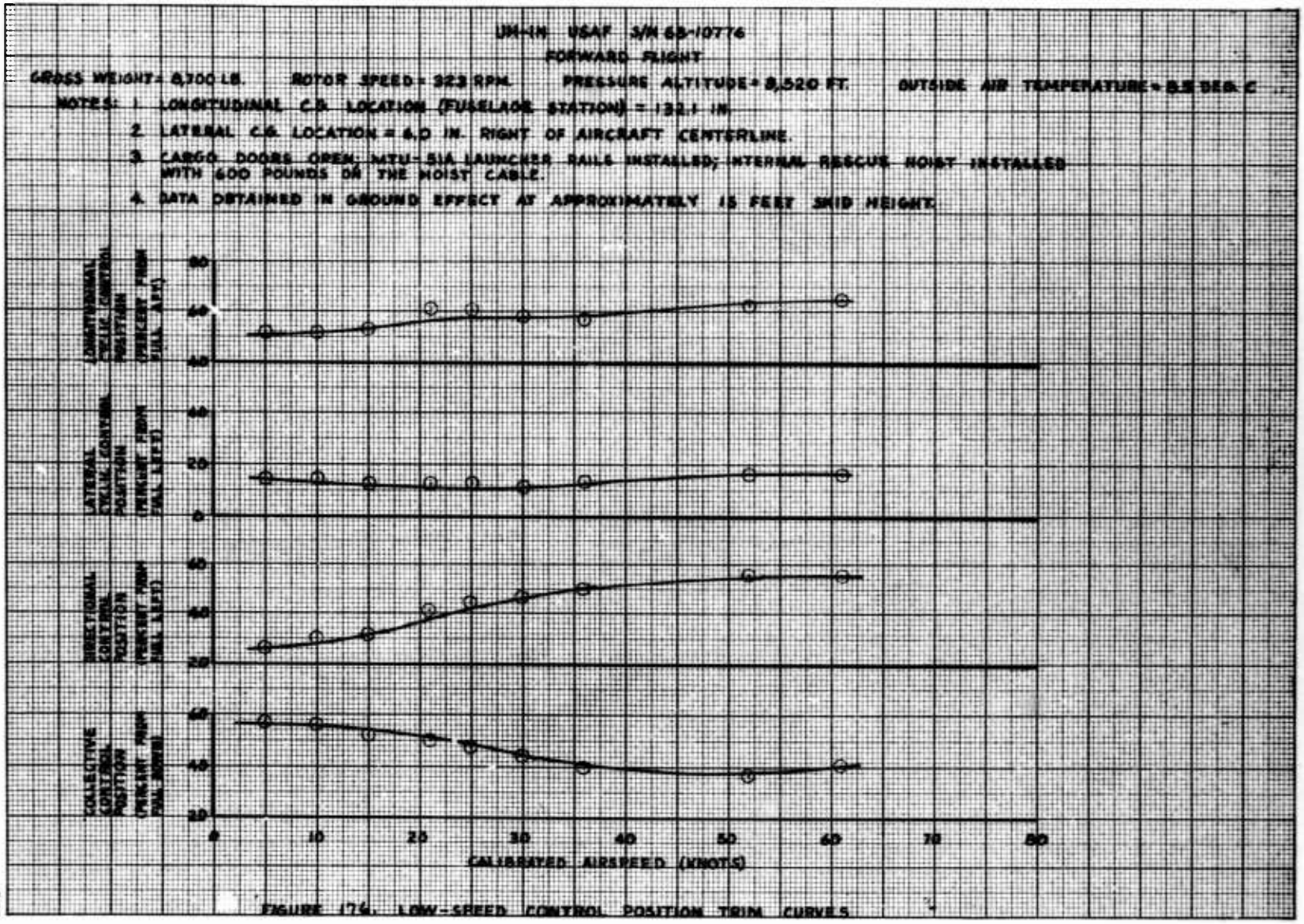


FIGURE 176. LOW-SPEED CONTROL POSITION TRIM CURVES

UH-1N USAF SN 68-10774
REARWARD FLIGHT

GROSS WEIGHT = 8,700 LB. ROTOR SPEED=313 RPM. PRESSURE ALTITUDE = 2,500 FT. AMBIENT AIR TEMPERATURE = 28 DEG. C

NOTES: 1. LONGITUDINAL C.G. LOCATION (FUSELAGE STATION) = 192.1 IN.
2. LATERAL C.G. LOCATION = 6.0 IN. RIGHT OF AIRCRAFT CENTERLINE
3. CARGO DOORS OPEN, MTE-SIA LAUNCHER RAILS INSTALLED; INTERNAL RESCUE HOIST INSTALLED WITH 600 POUNDS ON THE HOIST CABLE
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 15 FEET SKID HEIGHT.

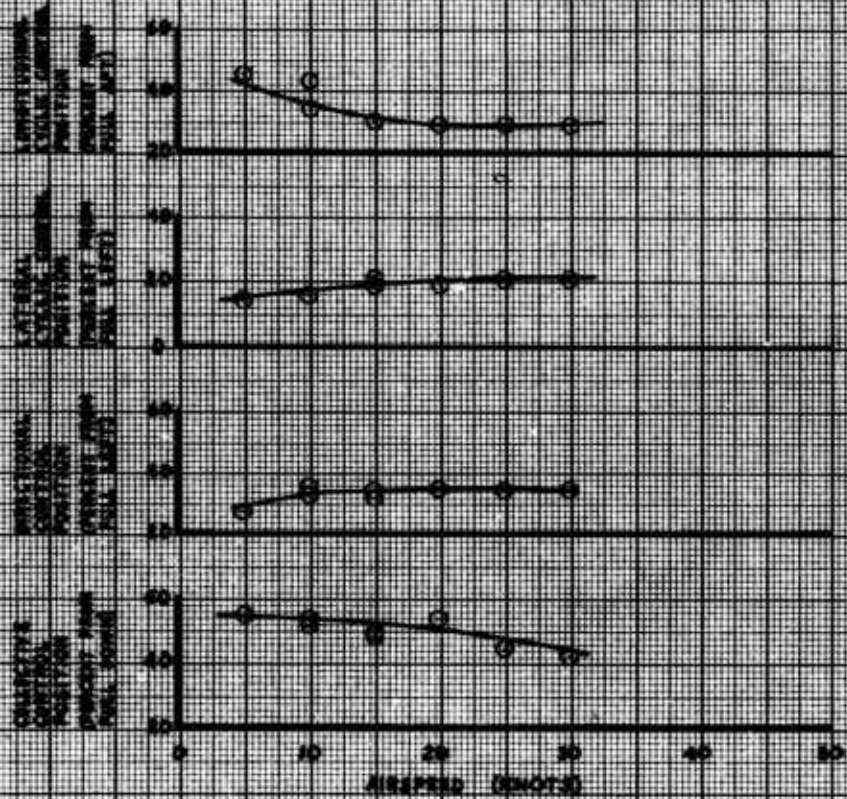


FIGURE F77. LOW-SPEED CONTROL POSITION TRIM CURVES

UH-1N USAF S/N 68-10778

LEFT SIDEWARD FLIGHT

GROSS WEIGHT = 8,700 LB. ROTOR SPEED = 323 RPM. PRESSURE ALTITUDE = 8,620 FT. OUTSIDE AIR TEMPERATURE = 8.8 DEG. C

NOTES: 1. LONGITUDINAL C.G. LOCATION (FUSELAGE STATION) = 132.1 IN.
2. LATERAL C.G. LOCATION = 6.0 IN. RIGHT OF AIRCRAFT CENTERLINE.
3. CARGO DOORS OPEN; M1U-5IA LAUNCHER RAILS INSTALLED; INTERNAL RESCUE HOIST INSTALLED WITH 500 POUNDS ON THE HOIST CABLE.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 15 FT. SKID HEIGHT.

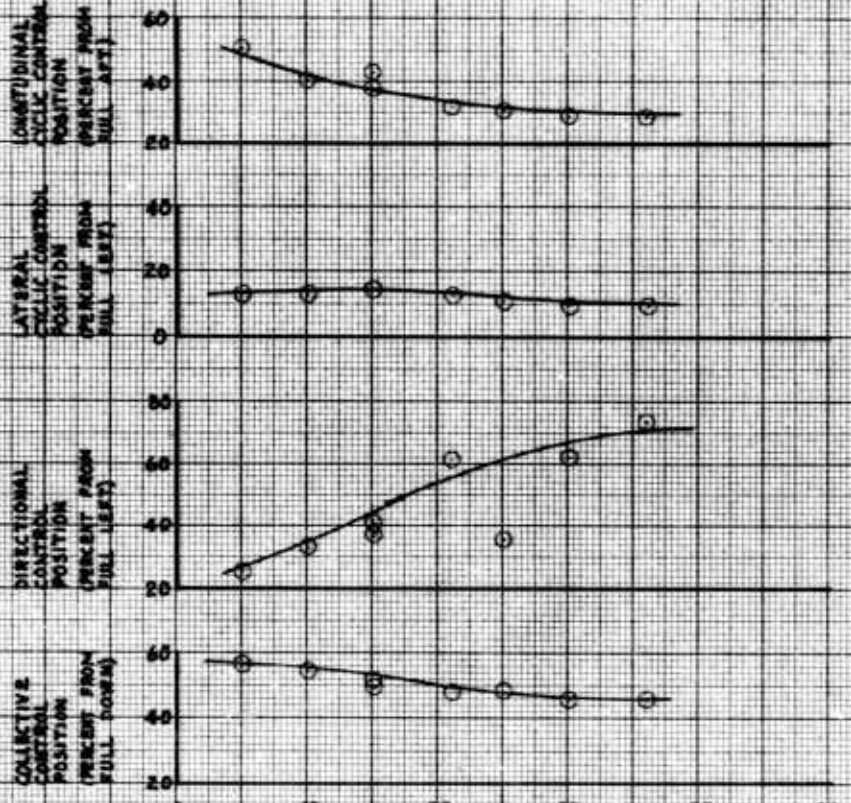


FIGURE 178. LOW-SPEED CONTROL POSITION CURVES

UH-1N USAF S/N 68-10776

GROSS WEIGHT = 9,800 lb ROTOR SPEED = 323 rpm PRESSURE ALTITUDE = 9,490 ft OUTSIDE AIR TEMPERATURE = 12.8 deg C

NOTES:
1. LONGITUDINAL CG LOCATION (FUSELAGE STATION) = 131.8 IN.
2. LATERAL CG LOCATION = 6.0 IN. RIGHT OF AIRCRAFT CENTERLINE.
3. CARGO DOORS OPEN; TWO LAU-59/A ROCKET LAUNCHERS INSTALLED WITH SEVEN INERT 2.75-INCH ROCKETS IN ONE POD; INTERNAL RESCUE HOIST INSTALLED WITH A 600-lb LOAD ON THE HOIST CABLE.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 7½ FEET SKID HEIGHT.

SYMBOL	FLIGHT DIRECTION
○	FORWARD
□	LEFT SIDEWARD
△	REARWARD

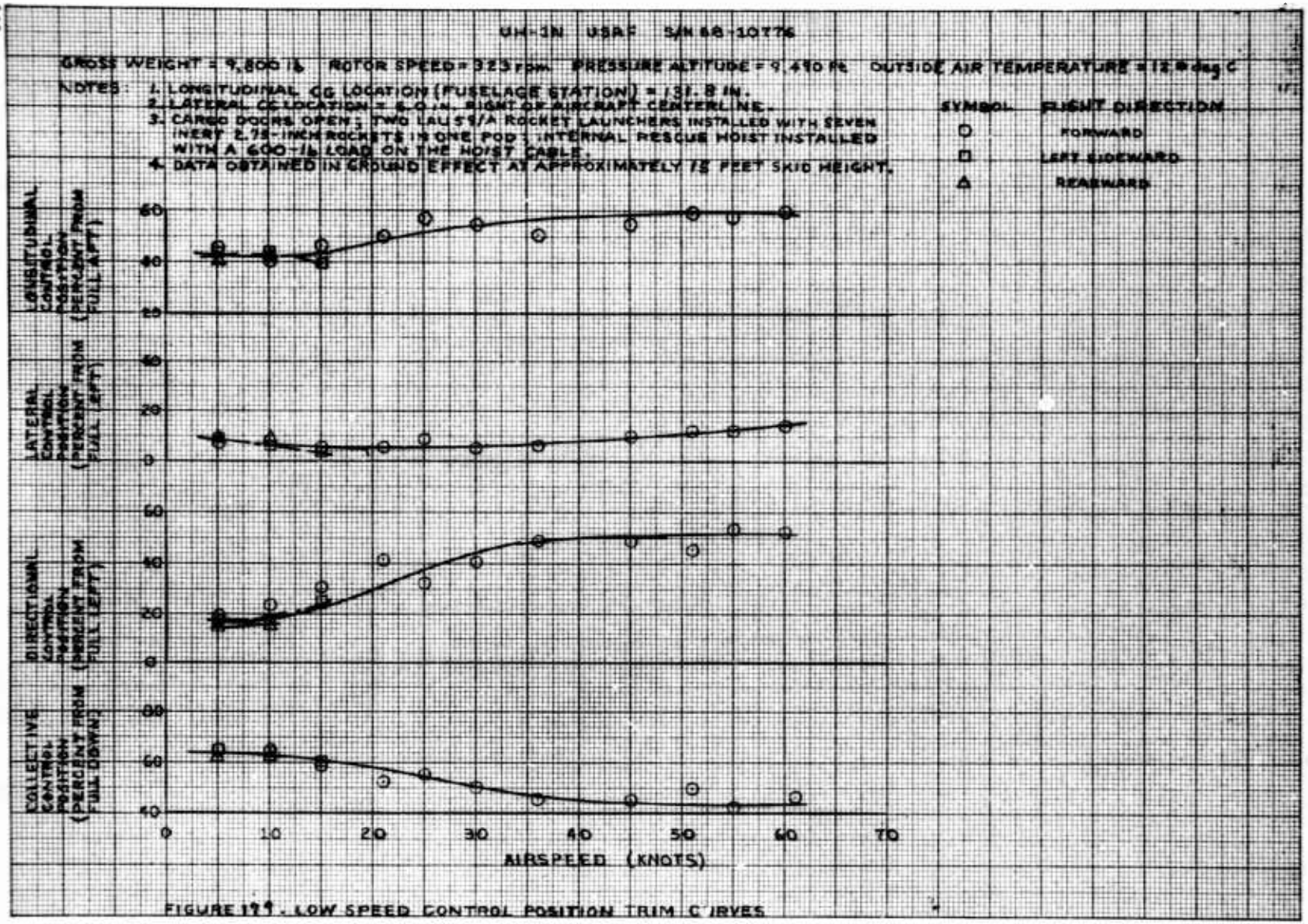


FIGURE 179. LOW SPEED CONTROL POSITION TRIM CURVES

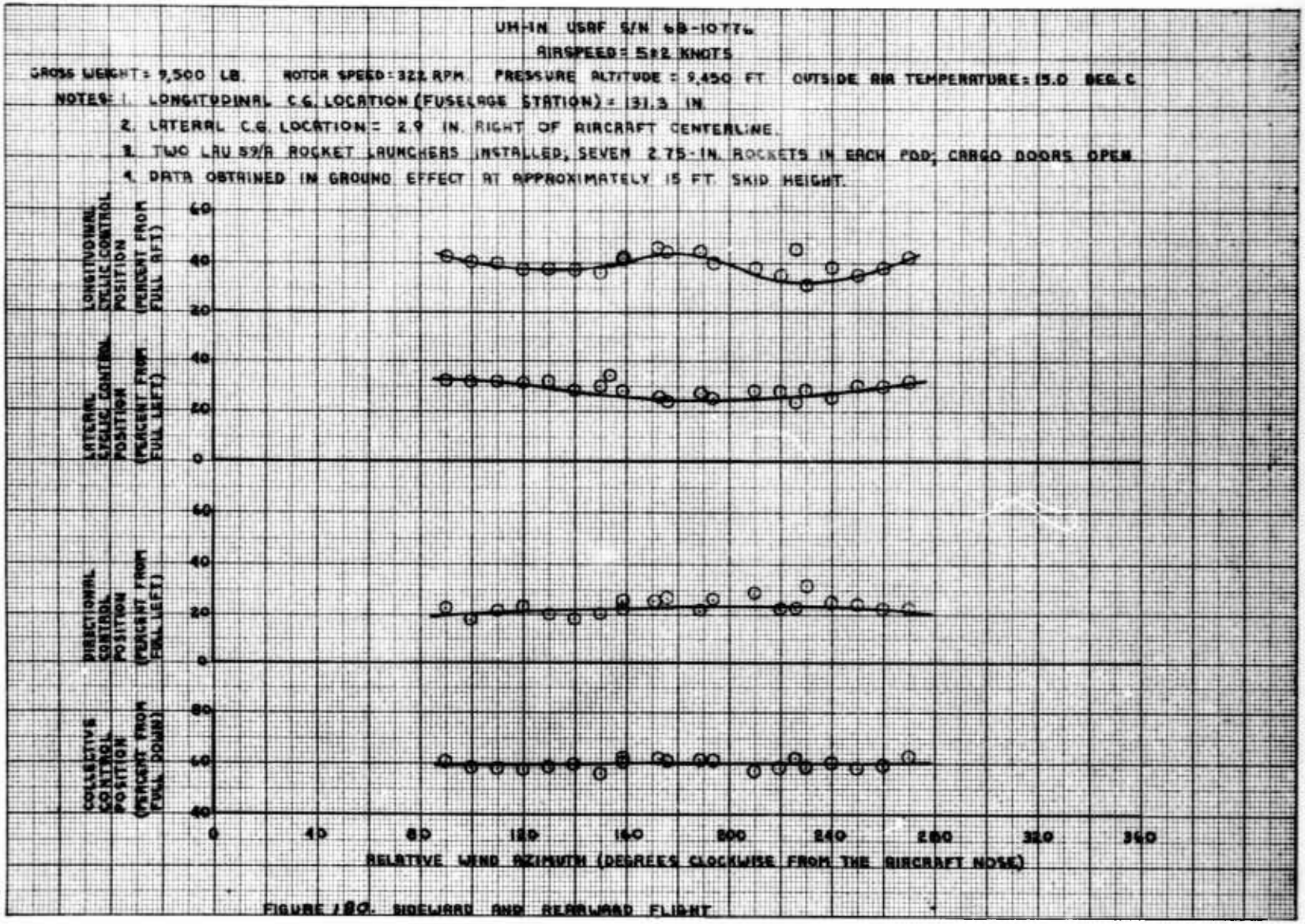


FIGURE 180. SIDEWARD AND REARWARD FLIGHT

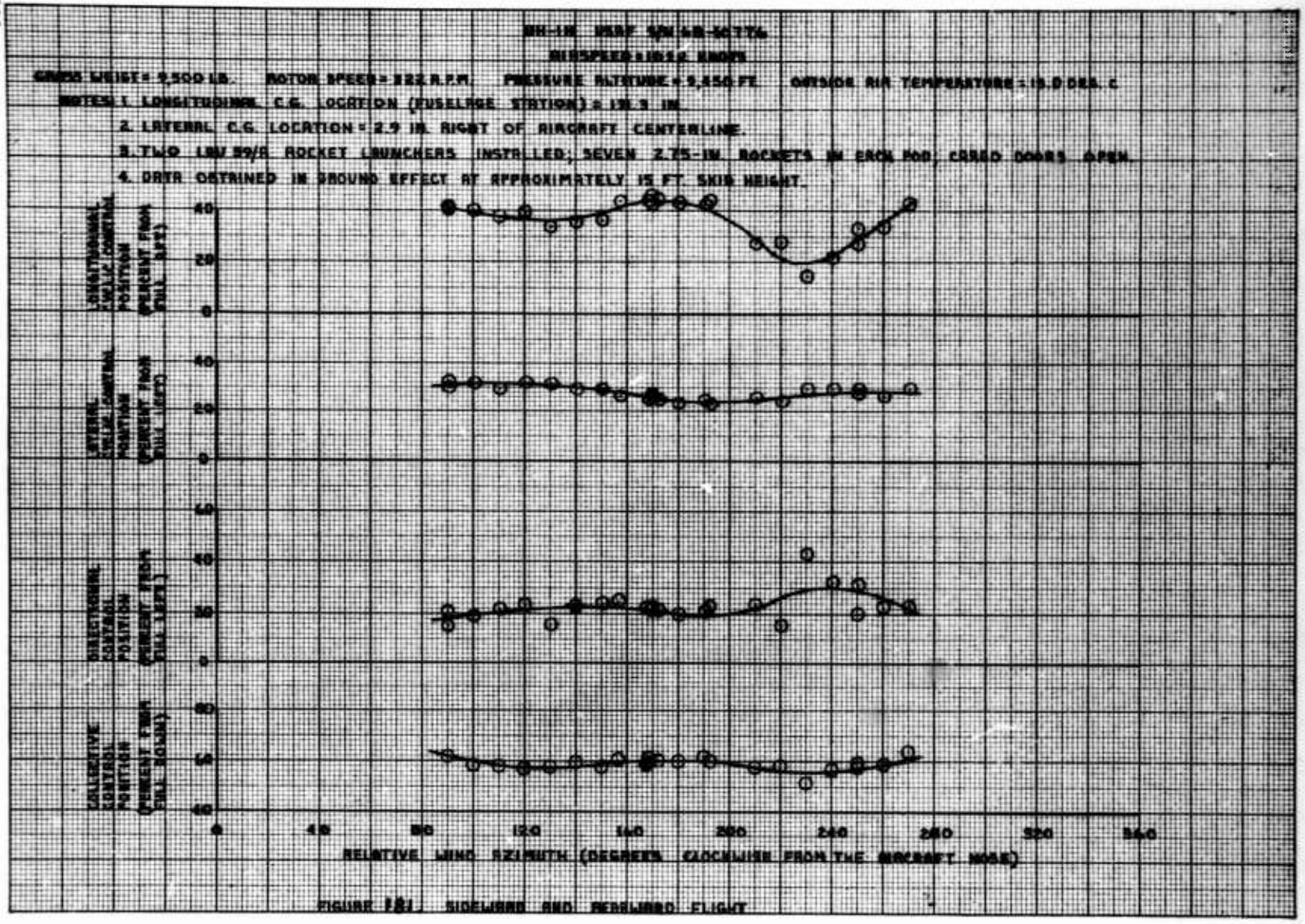


FIGURE 181. SIDEWARD AND REARWARD FLIGHT

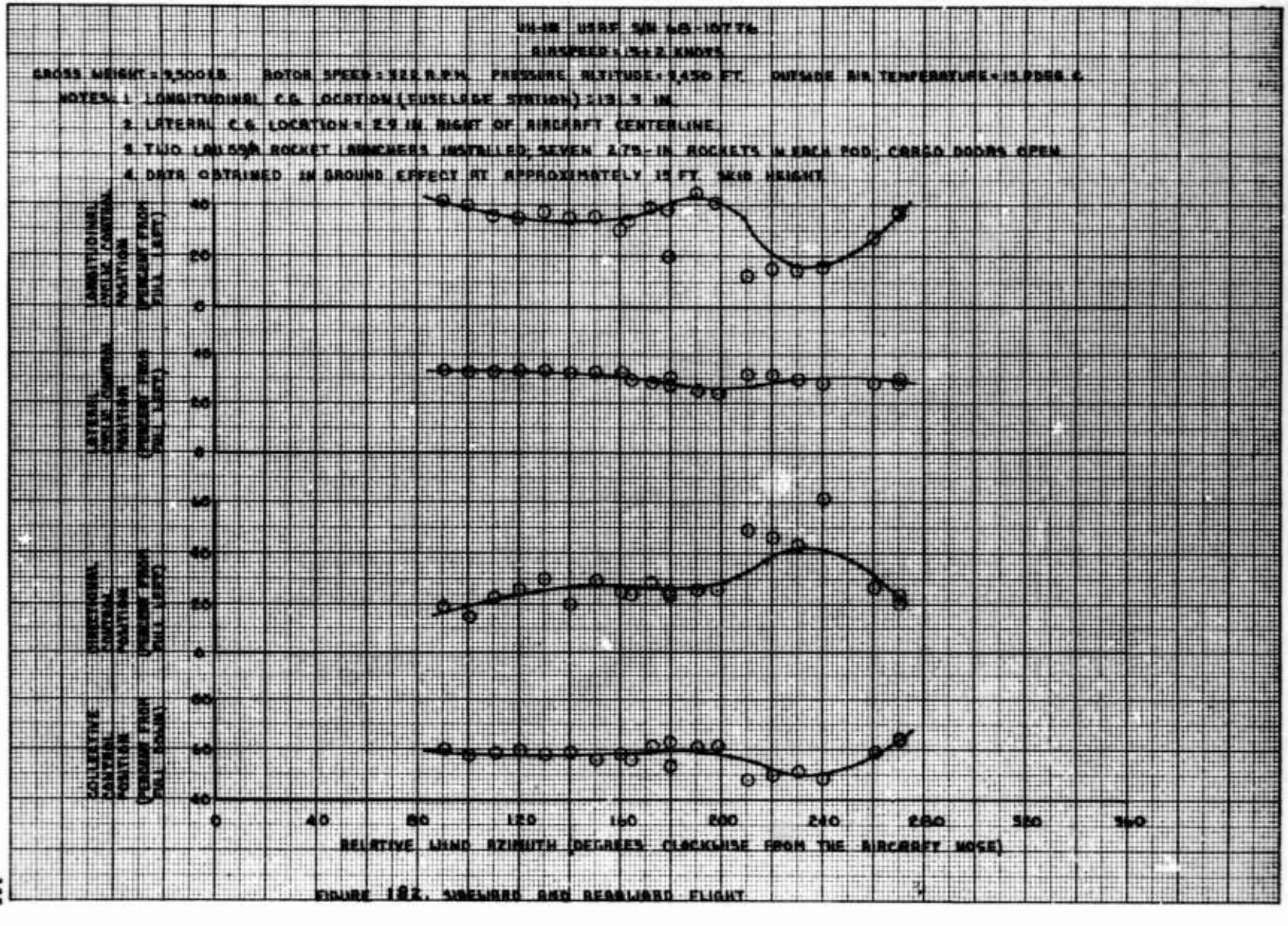


FIGURE 182. SIDEWARD AND REARWARD FLIGHT

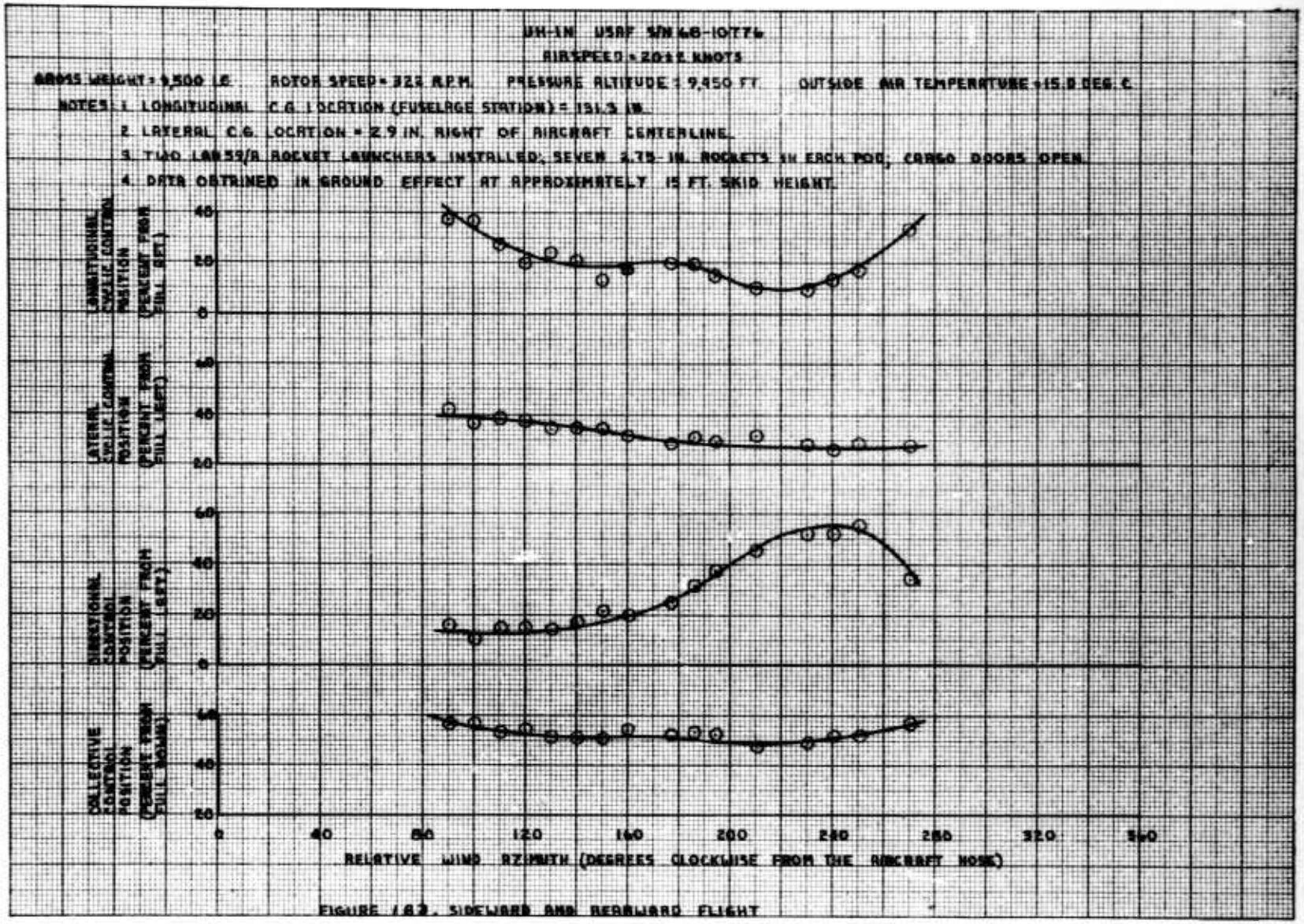


FIGURE 162. SIDEWARD AND REARWARD FLIGHT

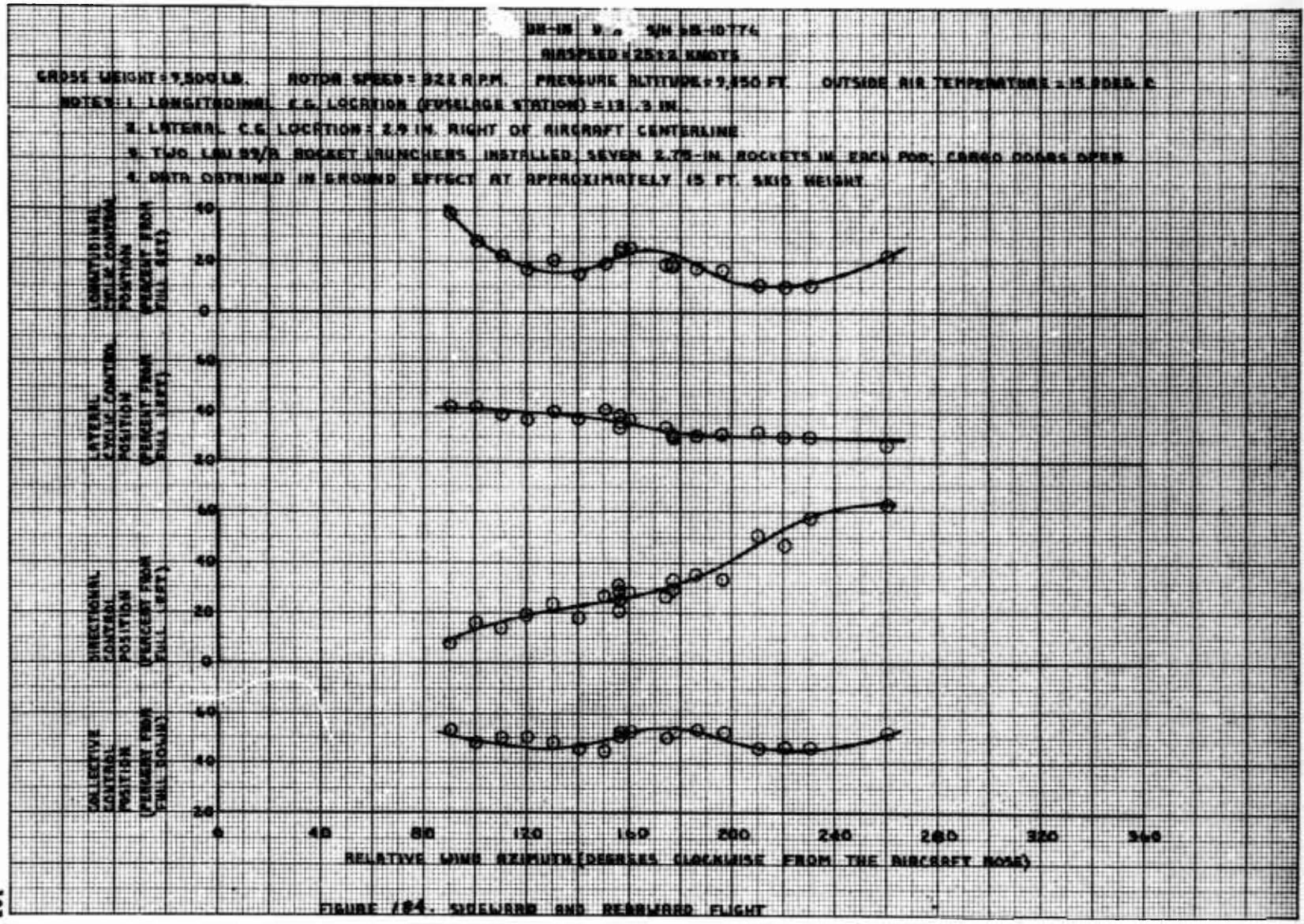


FIGURE 184. SIDEWARD AND REARWARD FLIGHT

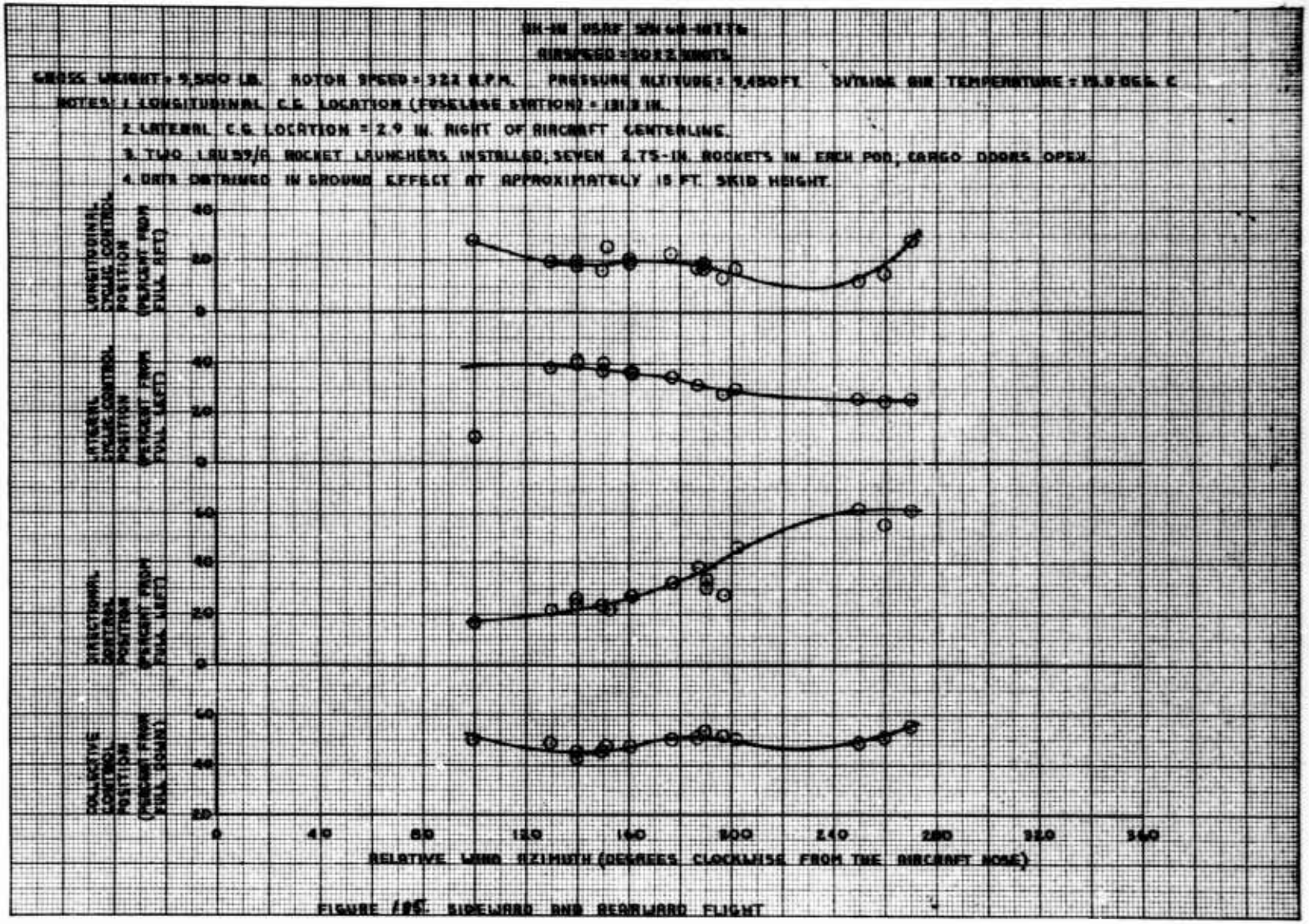


FIGURE 185. SIDEWARD AND REARWARD FLIGHT

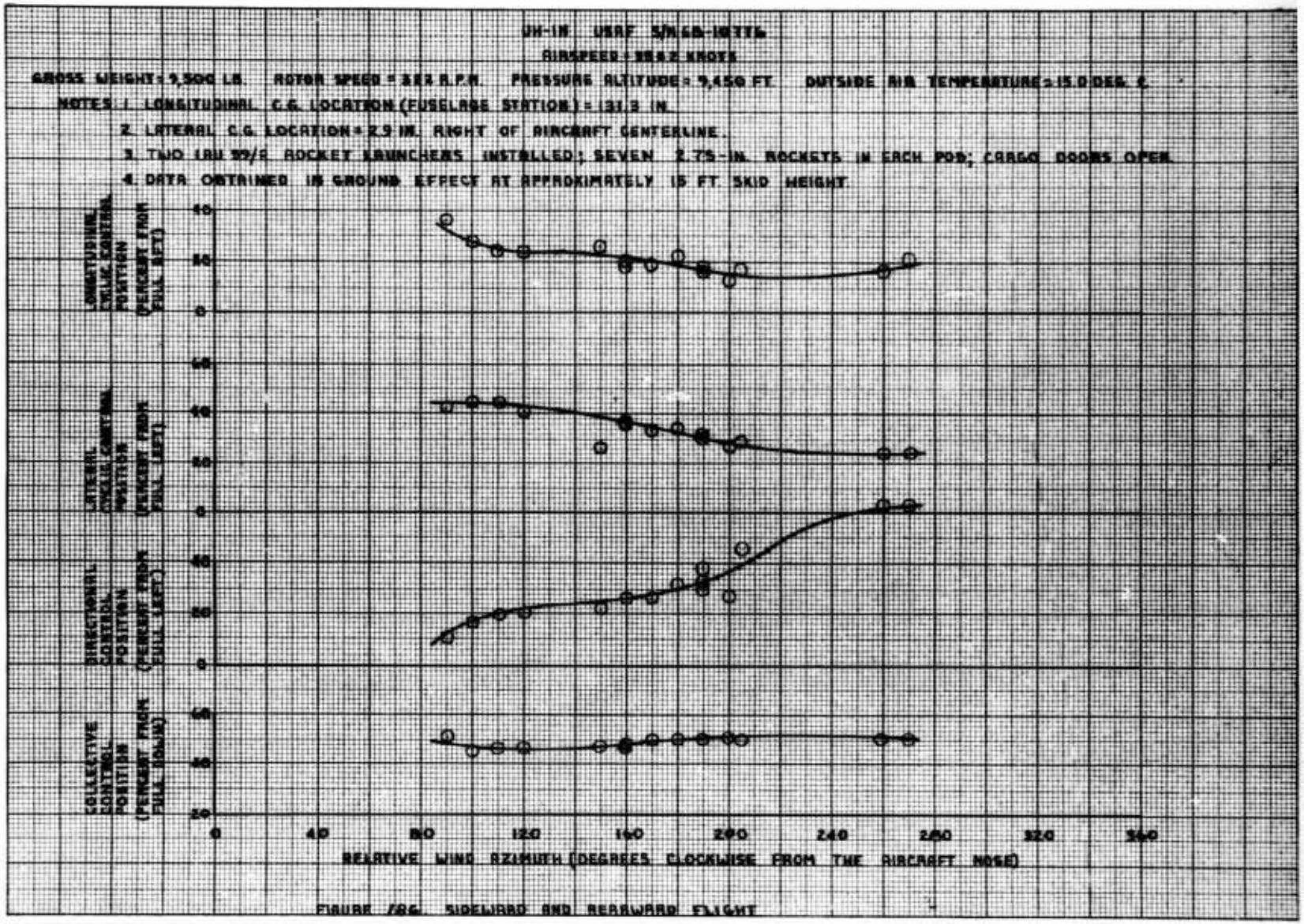


FIGURE 186. SIDEWARD AND REARWARD FLIGHT

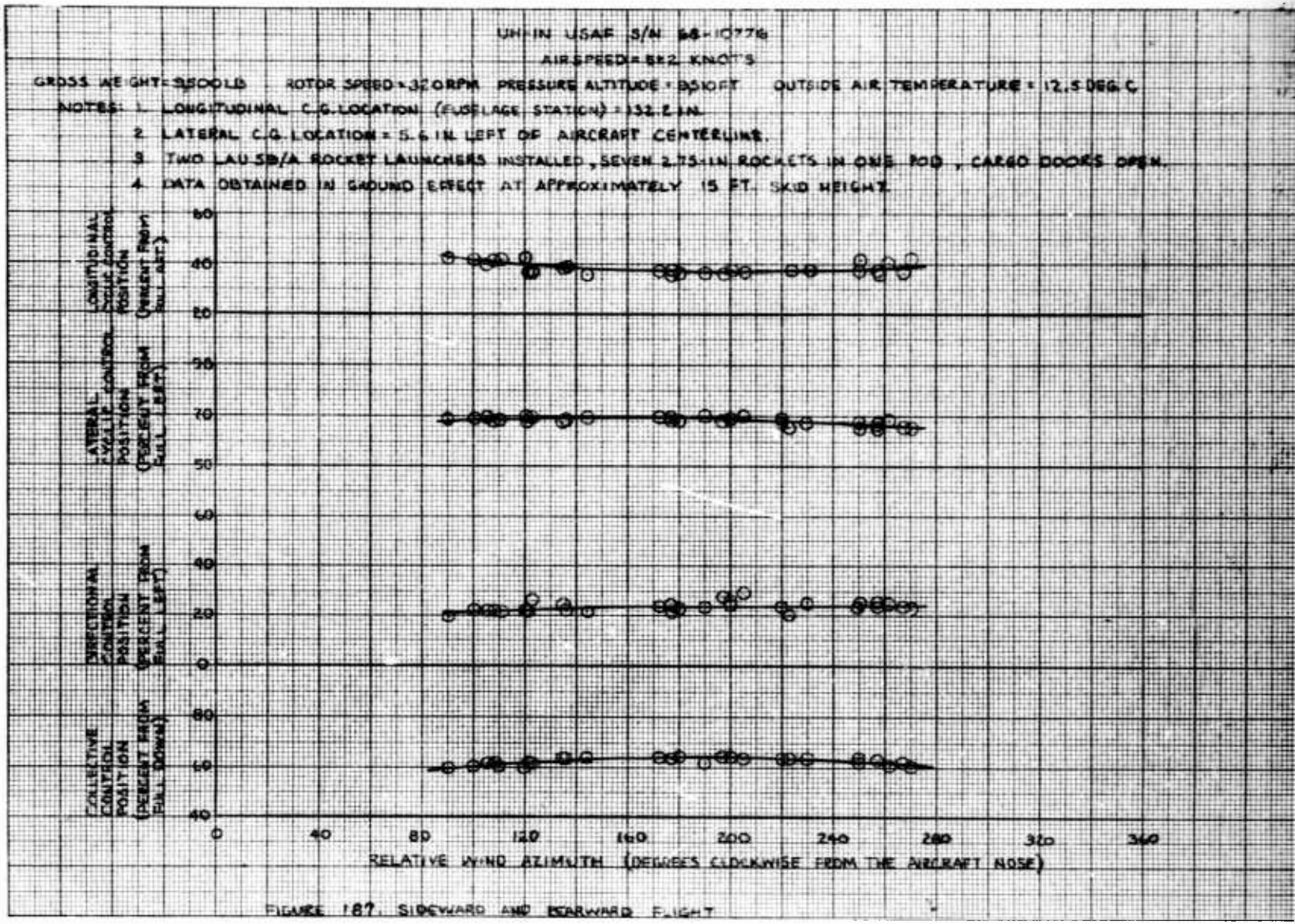


FIGURE 187. SIDEWARD AND REARWARD FLIGHT

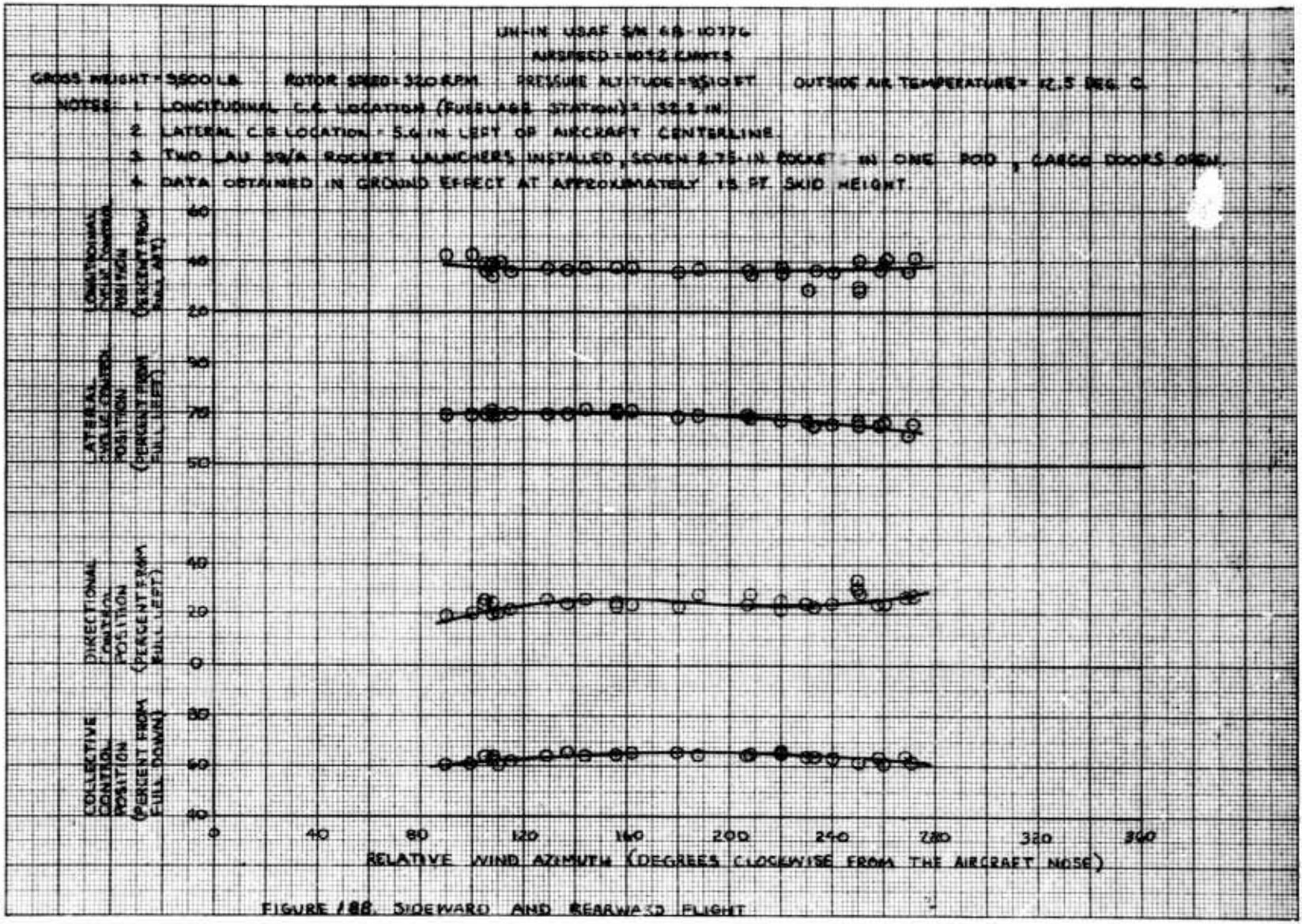


FIGURE 188. SIDEWARD AND REARWARD FLIGHT

UH-1N USAF S/N 68-10776

AIRSPEED = 15 & 2 KNOTS

GROSS WEIGHT = 9500 LB. ROTOR SPEED = 324 RPM PRESSURE ALTITUDE = 9510 FT. OUTSIDE AIR TEMPERATURE = 12.5 DEG. C.

NOTES: 1. LONGITUDINAL C.G. LOCATION (FUSELAGE STATION) = 132.2 IN
2. LATERAL C.G. LOCATION = 5.6 IN. LEFT OF AIRCRAFT CENTERLINE.
3. TWO LAU 59 A ROCKET LAUNCHERS INSTALLED, SEVEN 2.75 IN ROCKETS IN ONE POD, CARGO DOORS OPEN.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 5 FT. SKID HEIGHT.

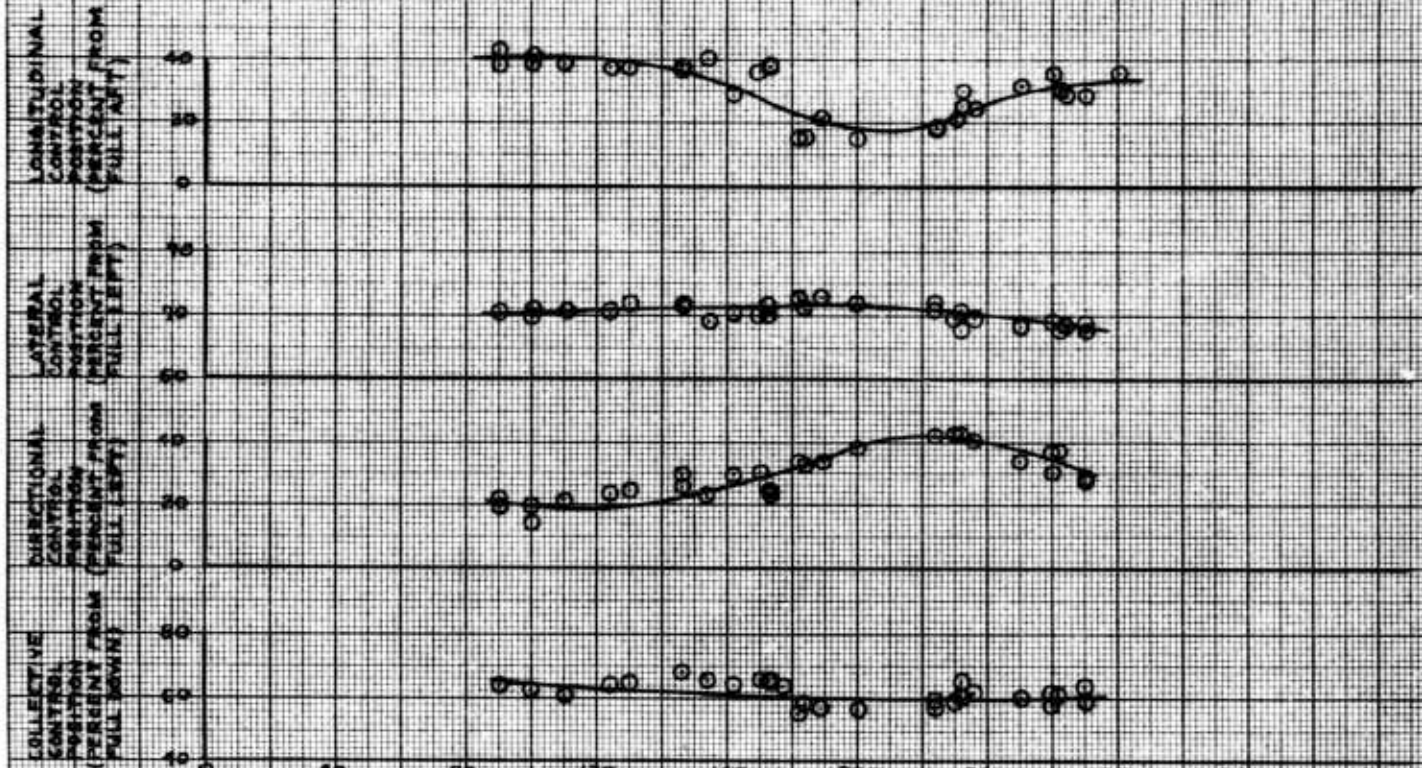


FIGURE 181. SIDEWARD AND REARWARD FLIGHT

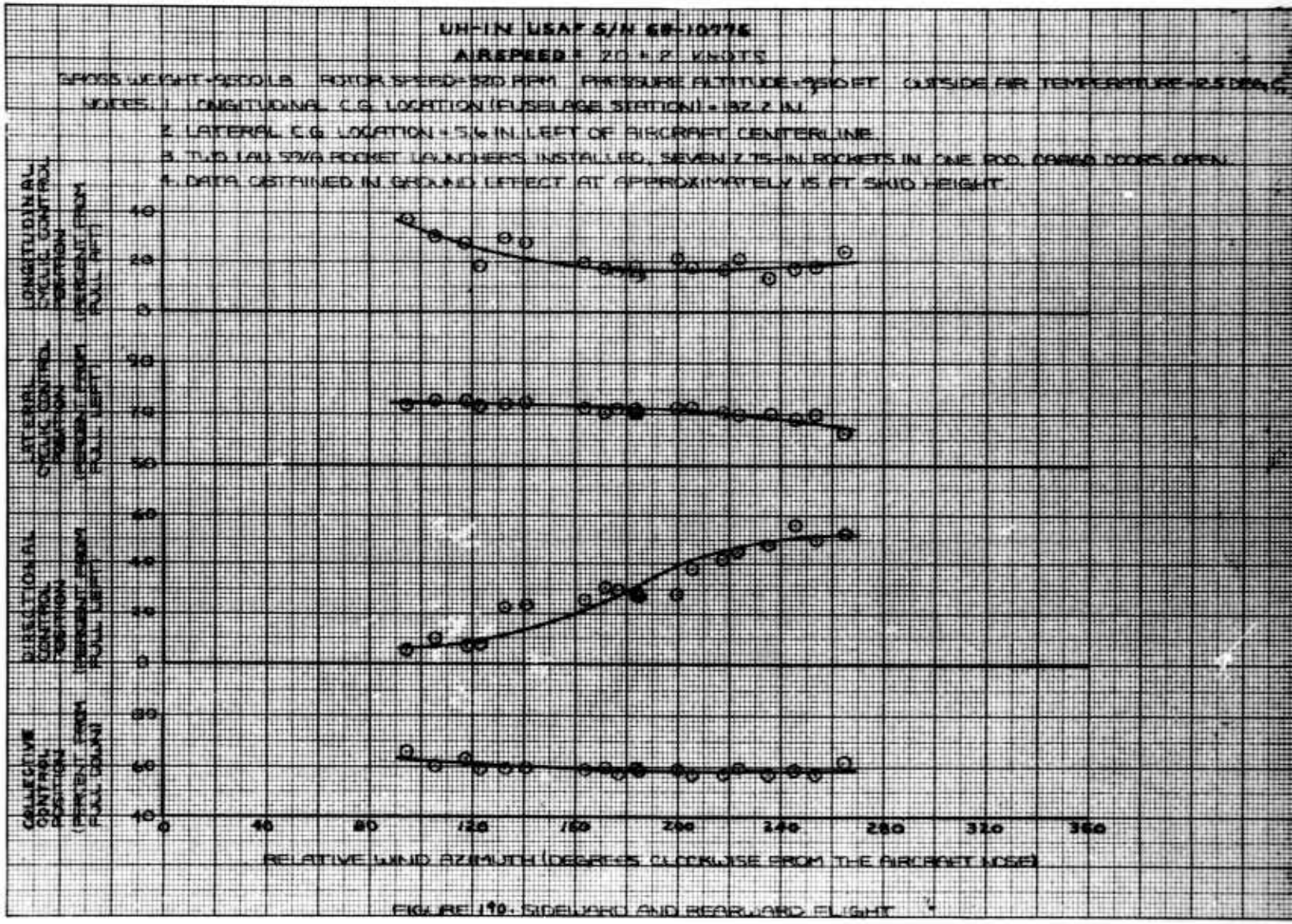


FIGURE 190. SIDEWARD AND REARWARD FLIGHT

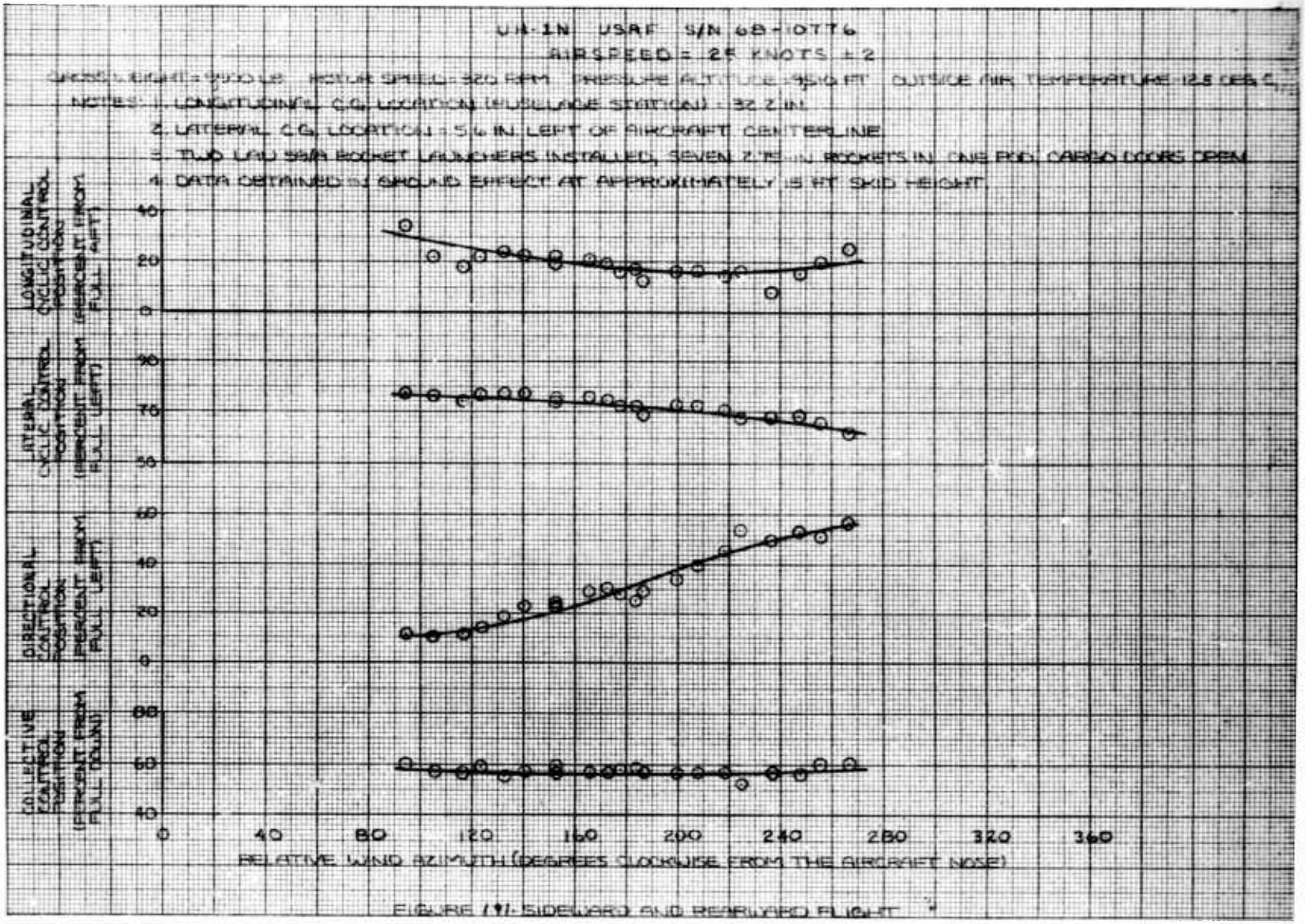
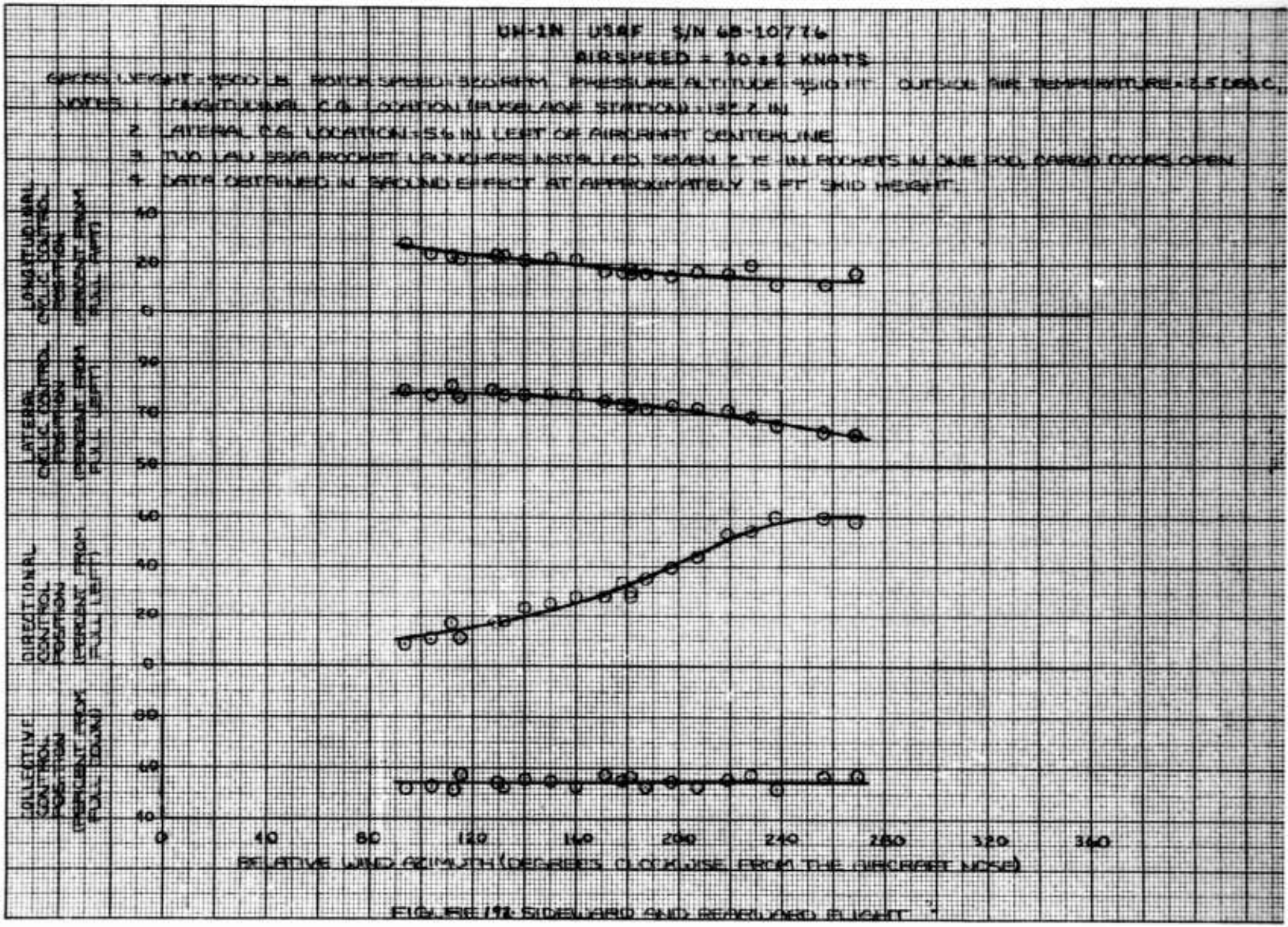


FIGURE (11). SIDEWARD AND REARWARD FLIGHT


UH-1N USAF S/N 68-10776
AIRSPEED = 30 ± 2 KNOTS
GROSS WEIGHT = 9500 LB ROTOR SPEED = 324 RPM PRESSURE ALTITUDE = 4910 FT OUTSIDE AIR TEMPERATURE = 2.5 DEG C
NOTES:
1. LONGITUDINAL C.G. LOCATION (BUTTLINE STATION) = 137.2 IN.
2. LATERAL C.G. LOCATION = 5.6 IN. LEFT OF AIRCRAFT CENTERLINE.
3. TWO LAU 59/A ROCKET LAUNCHERS INSTALLED, SEVEN 2.75 IN. ROCKETS IN EACH POD, CARGO DOORS OPEN.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 15 FT SKID HEIGHT.
LONGITUDINAL CYCLIC CONTROL POSITION (PERCENT FROM FULL AFT)
LATERAL CYCLIC CONTROL POSITION (PERCENT FROM FULL LEFT)
DIRECTIONAL CONTROL POSITION (PERCENT FROM FULL LEFT)
COLLECTIVE CONTROL POSITION (PERCENT FROM FULL DOWN)
RELATIVE WIND AZIMUTH (DEGREES CLOCKWISE FROM THE AIRCRAFT NOSE)
FIGURE 19. SIDEWARD AND REARWARD FLIGHT

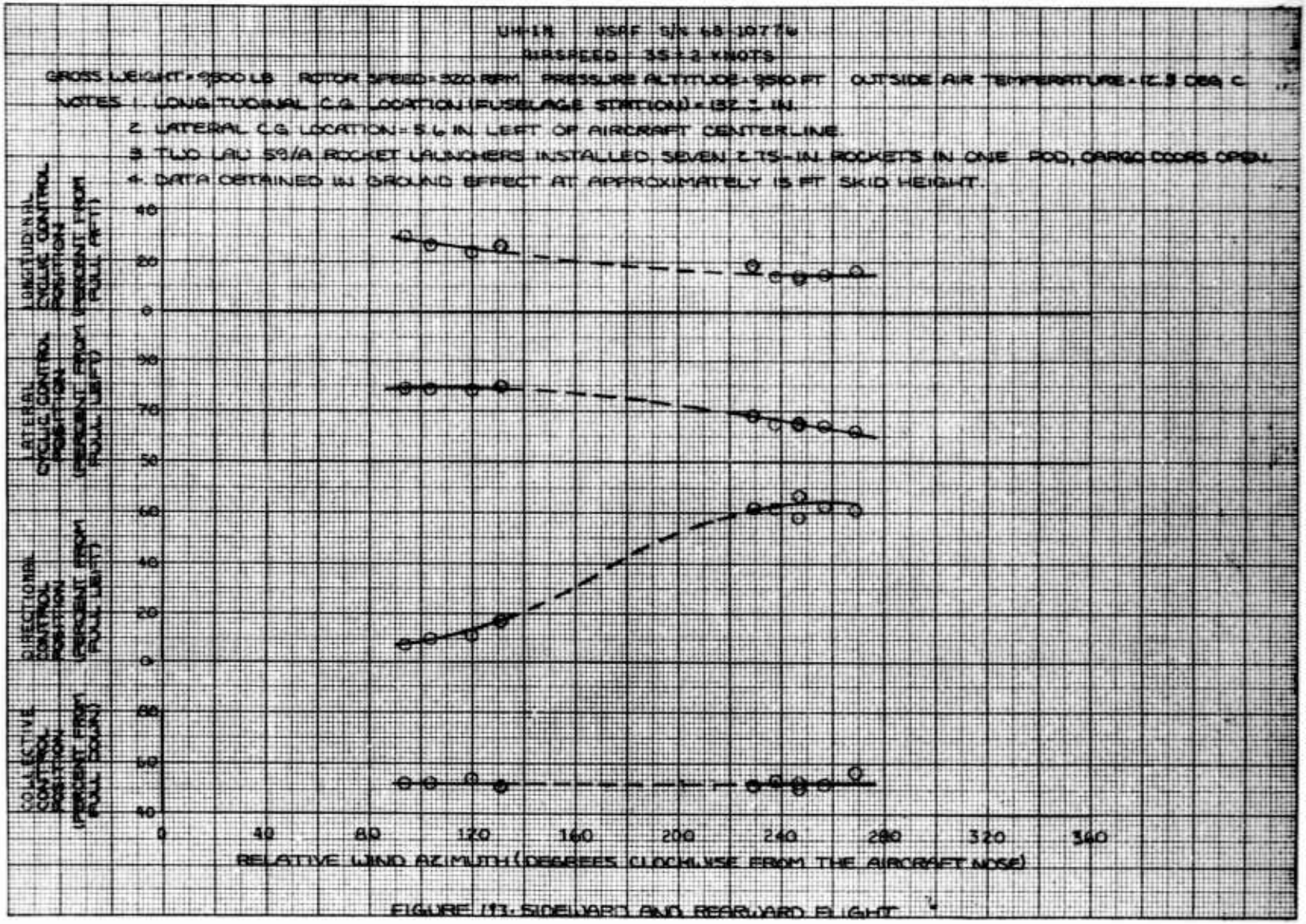


FIGURE 113. SIDEWARD AND REARWARD FLIGHT

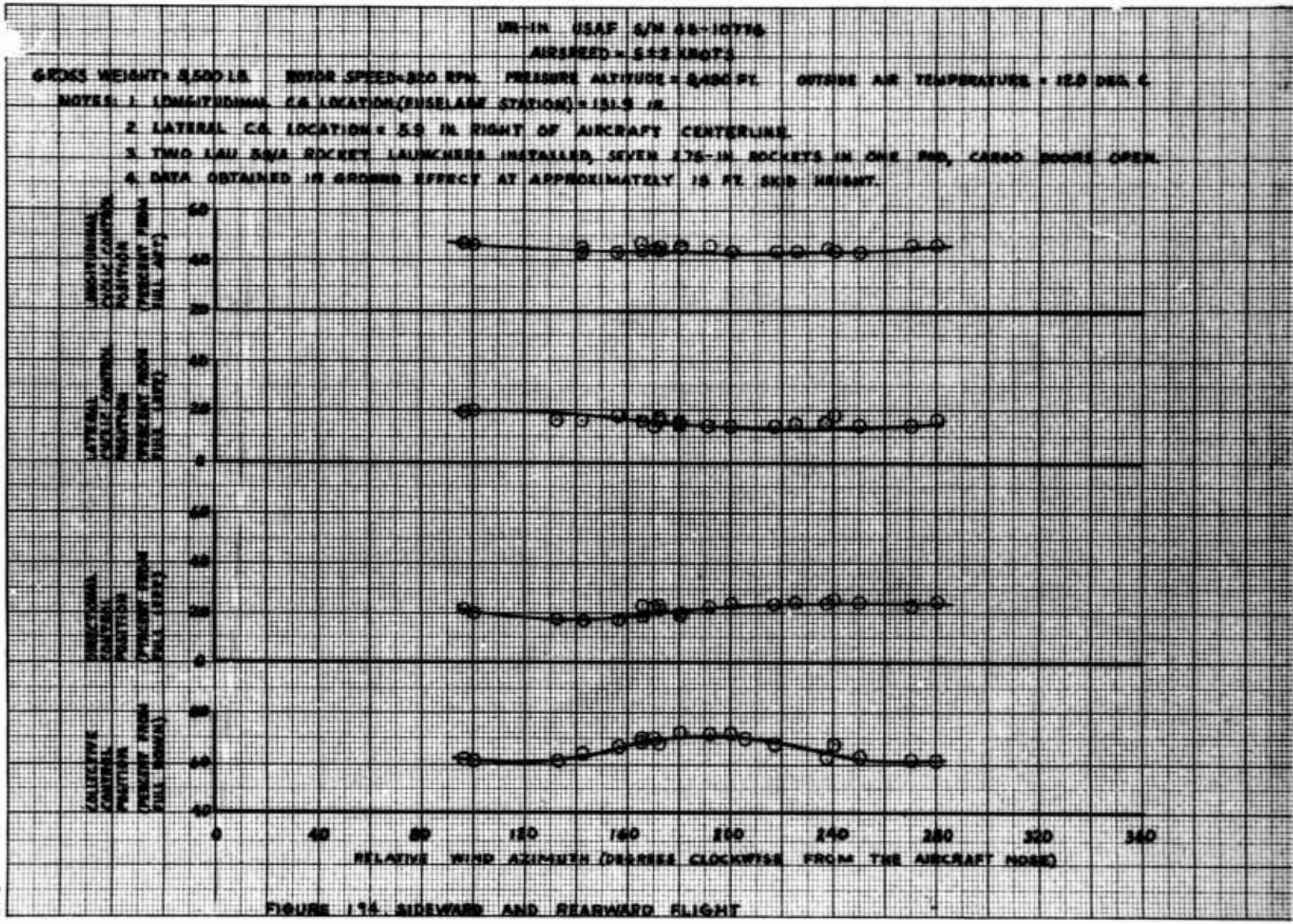


FIGURE 176. SIDEWARD AND REARWARD FLIGHT

UH-1N USAF S/N 68-10774
AIRSPEED = 10 ± 2 KNOTS

GROSS WEIGHT = 9,500 LB. ROTOR SPEED = 320 RPM PRESSURE ALTITUDE = 9,450 FT. OUTSIDE AIR TEMPERATURE = 12.0 DEG. C

NOTES: 1. LONGITUDINAL C.G. LOCATION (FUSELAGE STATION) = 139.9 IN.
2. LATERAL C.G. LOCATION = 5.9 IN. RIGHT OF AIRCRAFT CENTERLINE.
3. TWO LAU-59/A ROCKET LAUNCHERS INSTALLED, SEVEN 2.75-IN ROCKETS IN ONE POD, CARGO DOORS OPEN.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 15 FT SKID HEIGHT.

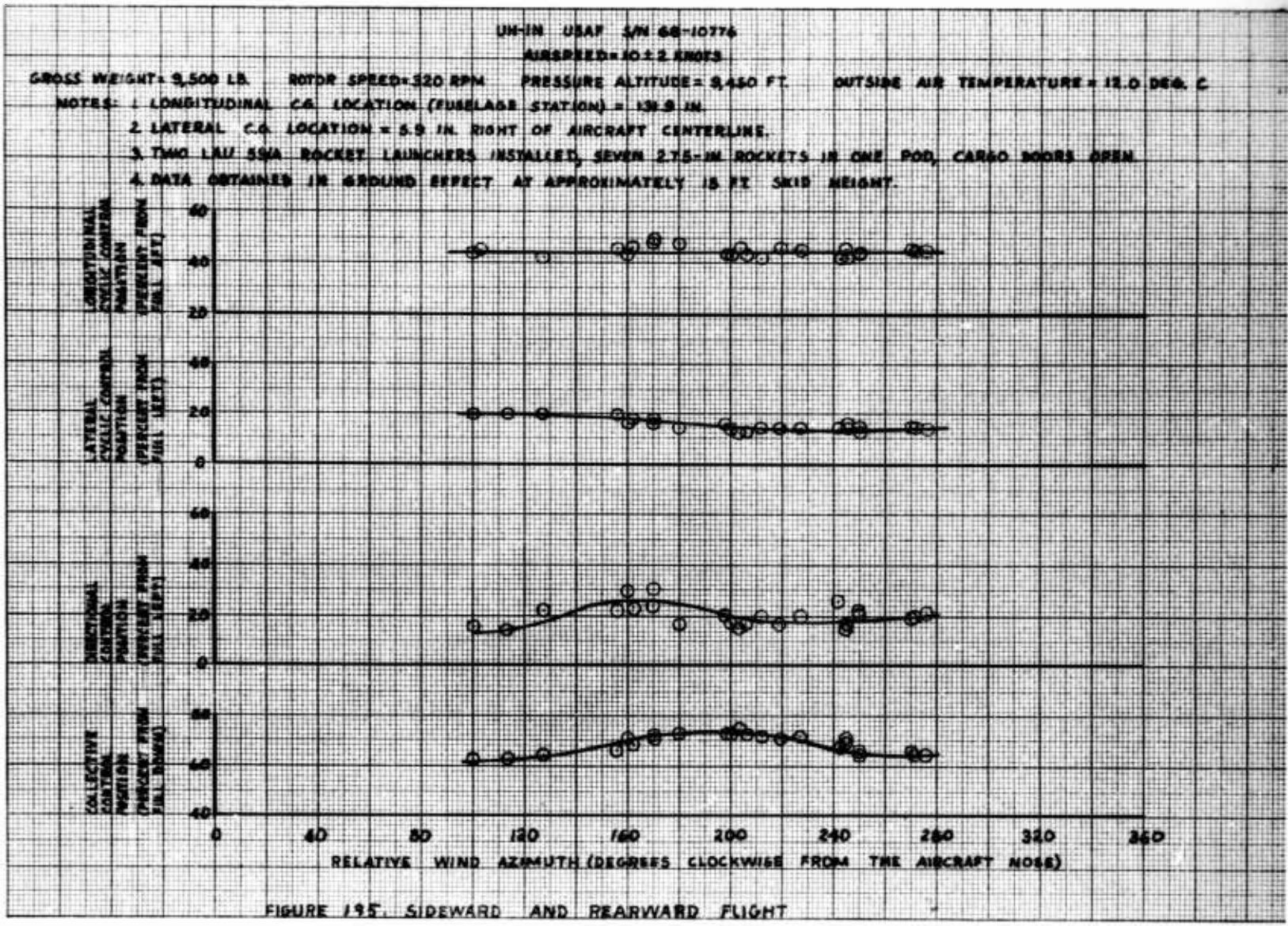


FIGURE 195. SIDEWARD AND REARWARD FLIGHT

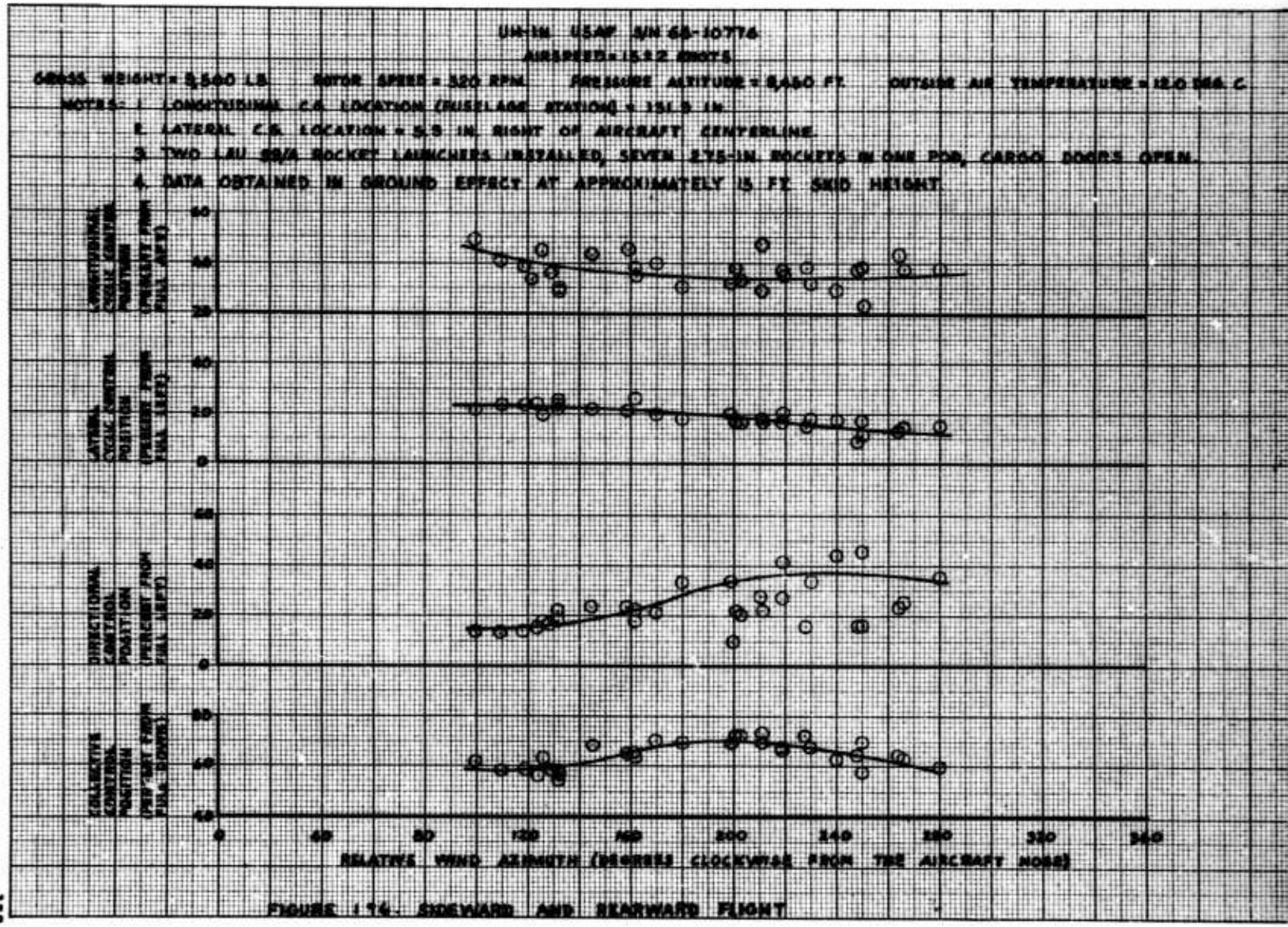


FIGURE 114. SIDEWARD AND REARWARD FLIGHT

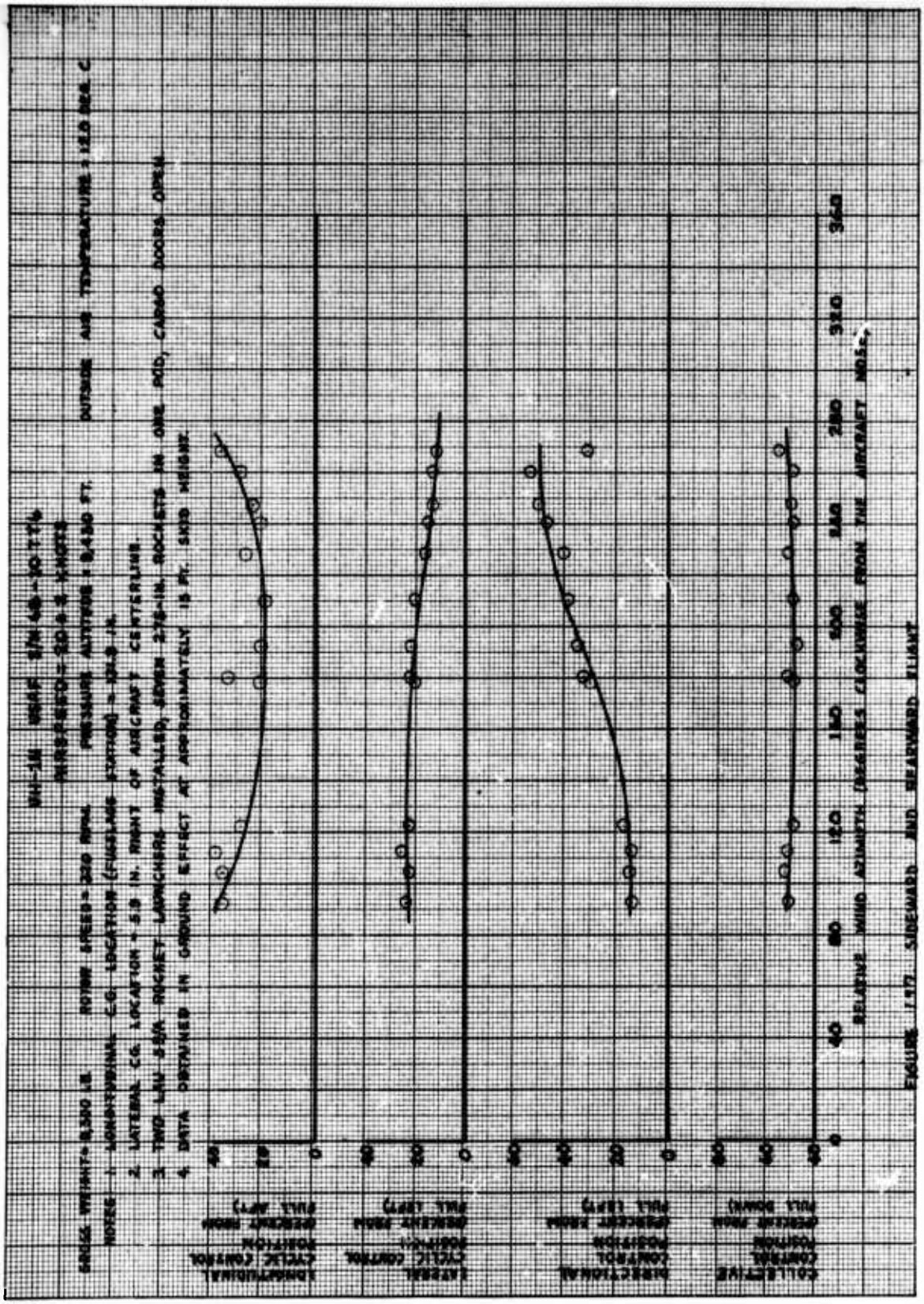


FIGURE 147. SIDEWARD AND REARWARD FLIGHT

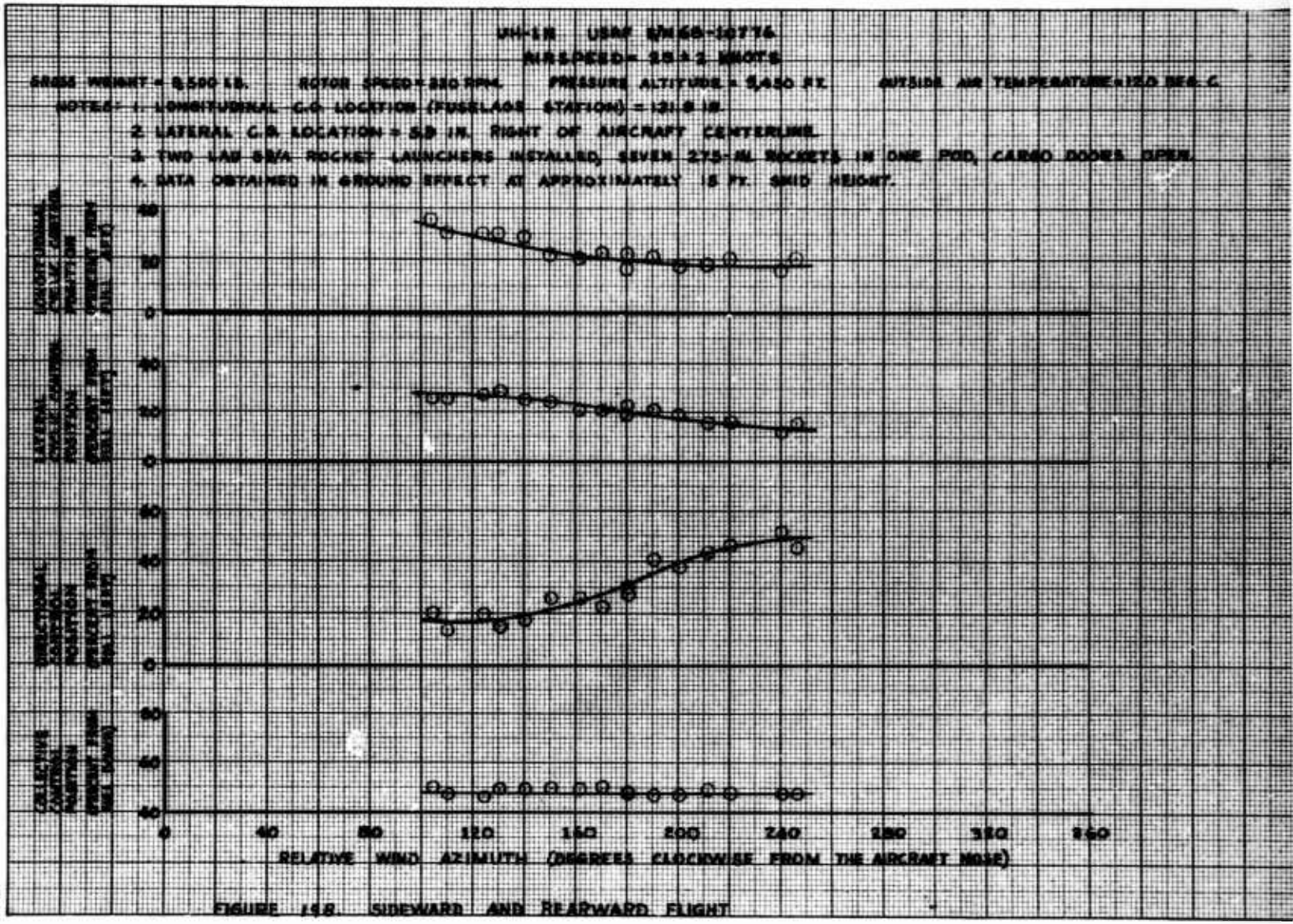


FIGURE 148. SIDEWARD AND REARWARD FLIGHT

UH-1N USAF S/N 68-10776

AIRSPEED = 30.2 KNOTS

GROSS WEIGHT = 9,800 Lb. ROTOR SPEED = 320 RPM. PRESSURE ALTITUDE = 9,450 FT. OUTSIDE AIR TEMPERATURE = 12.0 DEG. C

NOTES: 1. LONGITUDINAL C.G. LOCATION (FUSELAGE STATION) = 131.9 IN.
2. LATERAL C.G. LOCATION = 5.9 IN. RIGHT OF AIRCRAFT CENTERLINE.
3. TWO LAU 59/A ROCKET LAUNCHERS INSTALLED, SEVEN 2.75-IN. ROCKETS IN ONE POD, CARGO DOORS OPEN.
4. DATA OBTAINED IN GROUND EFFECT AT APPROXIMATELY 15 FT. SKID HEIGHT.

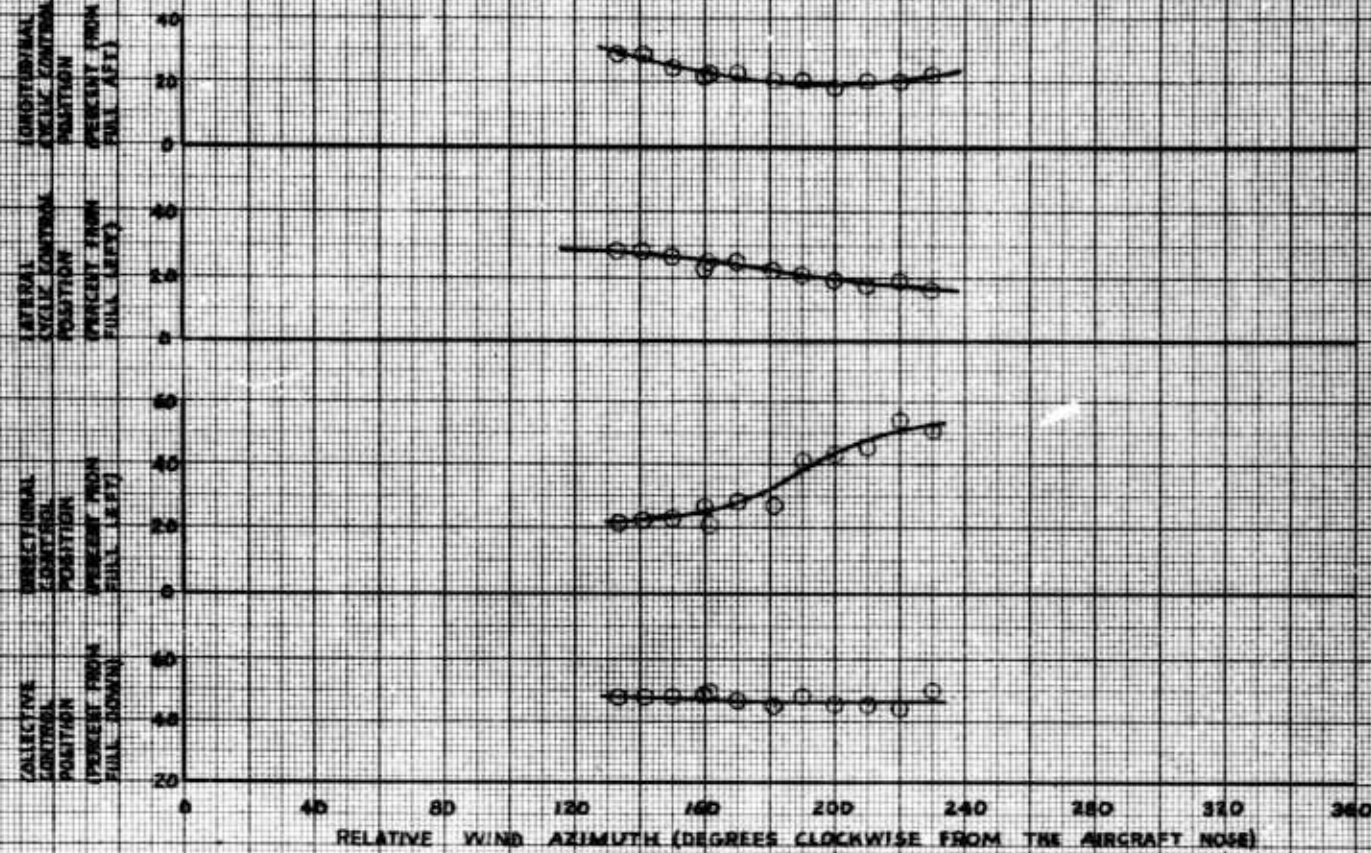


FIGURE 199. SIDEWARD AND REARWARD FLIGHT

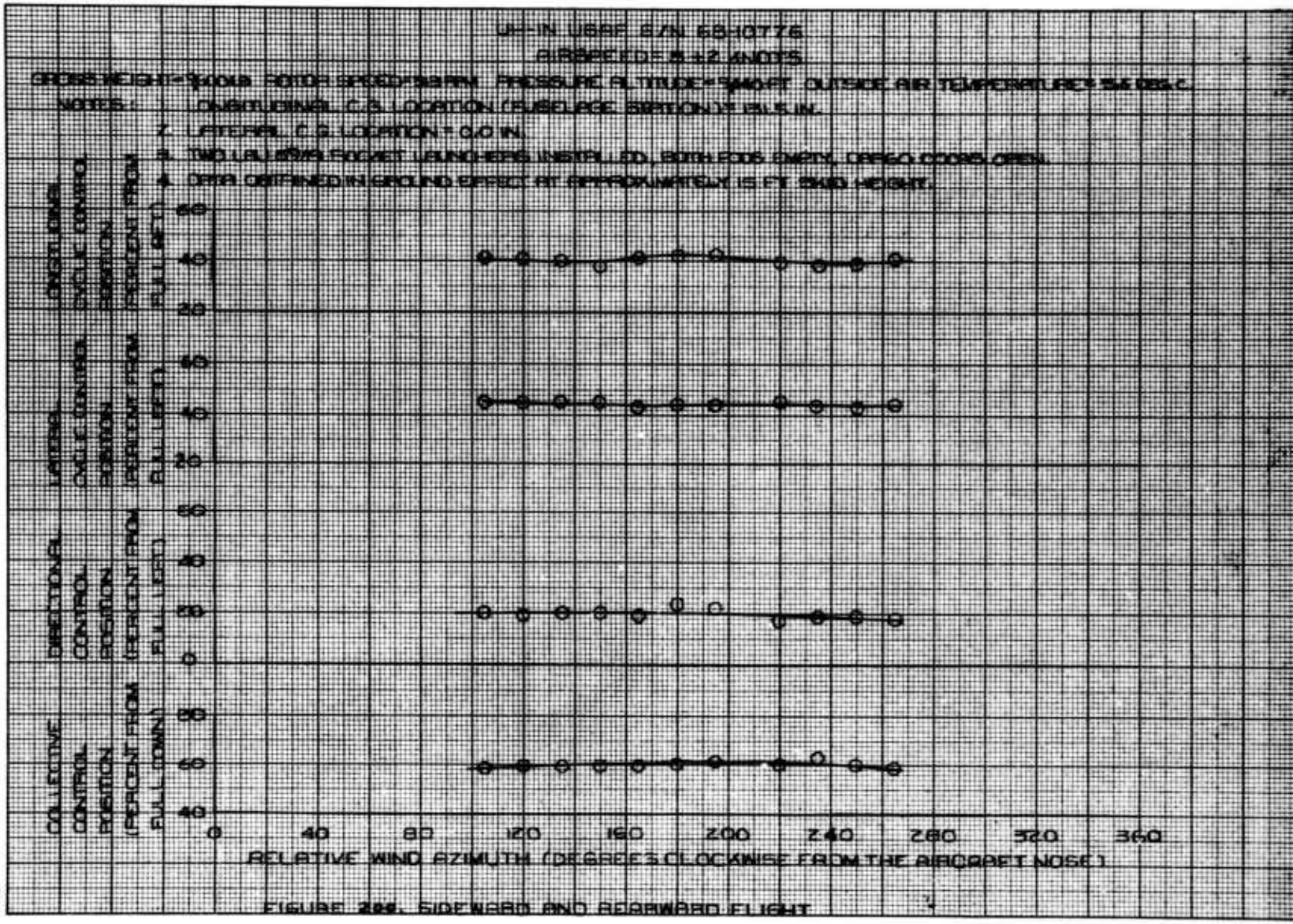


FIGURE 288. SIDEWARD AND REARWARD FLIGHT

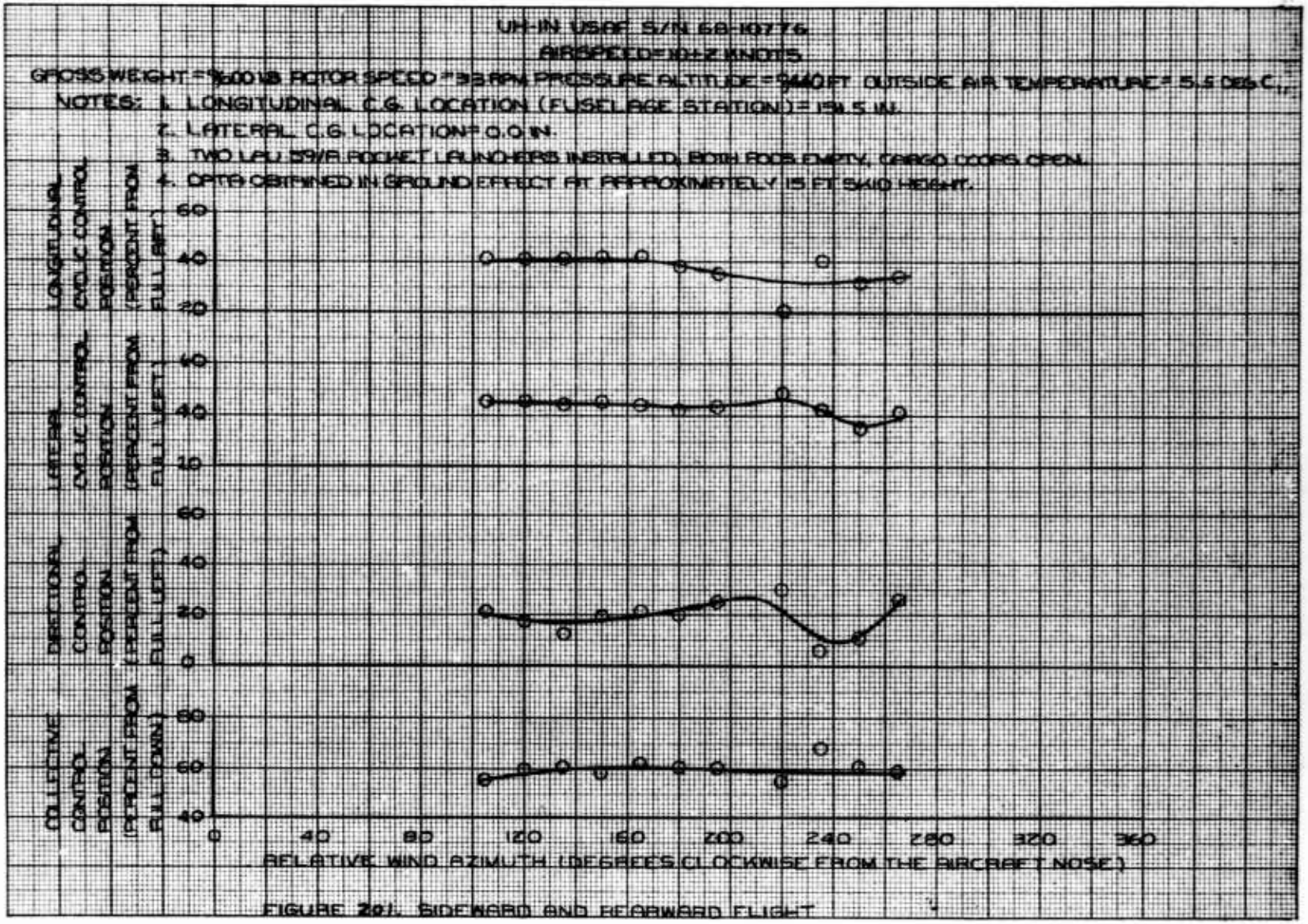


FIGURE 20. SIDEWARD AND REARWARD FLIGHT

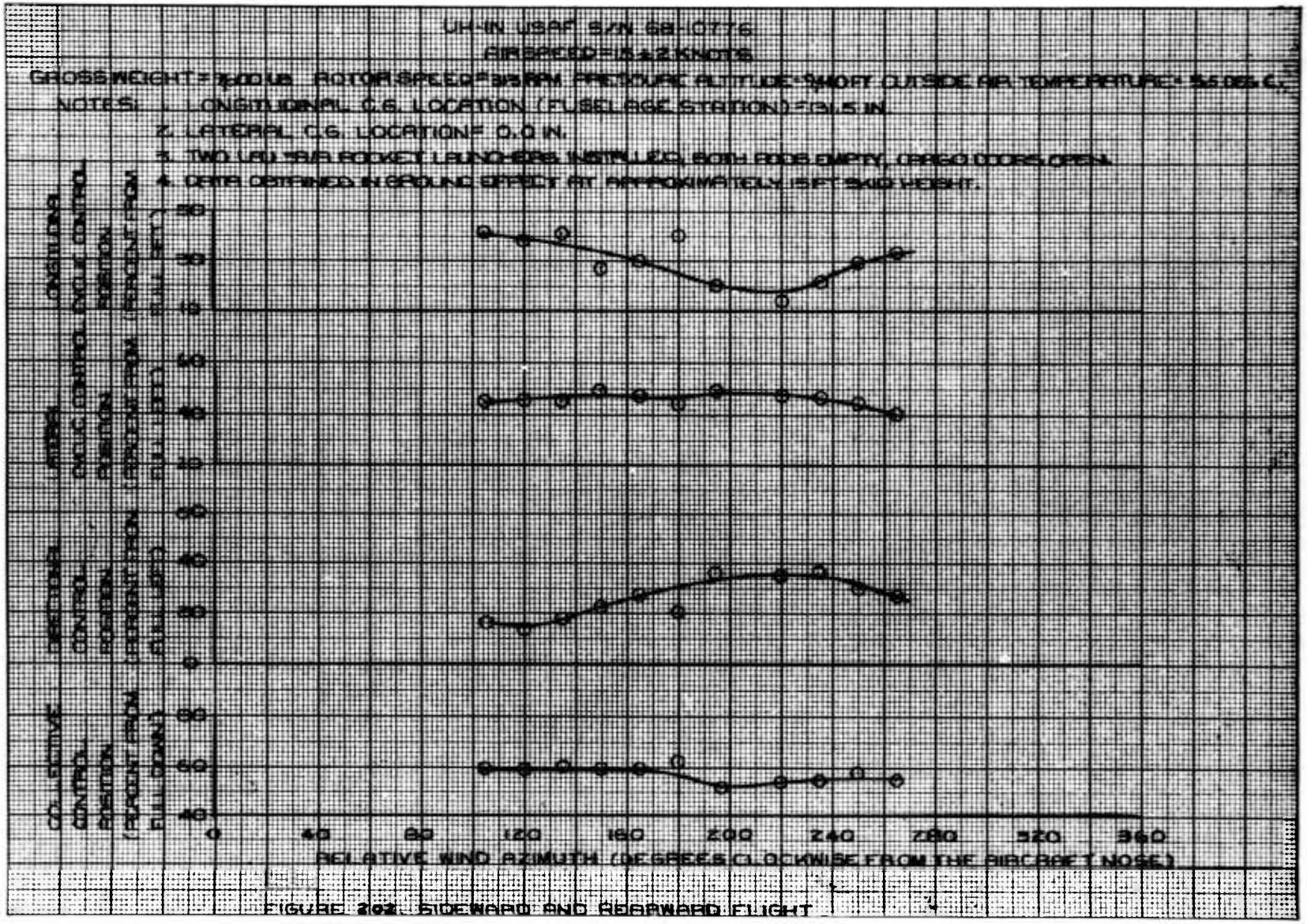


FIGURE 202. SIDEWARD AND REARWARD FLIGHT

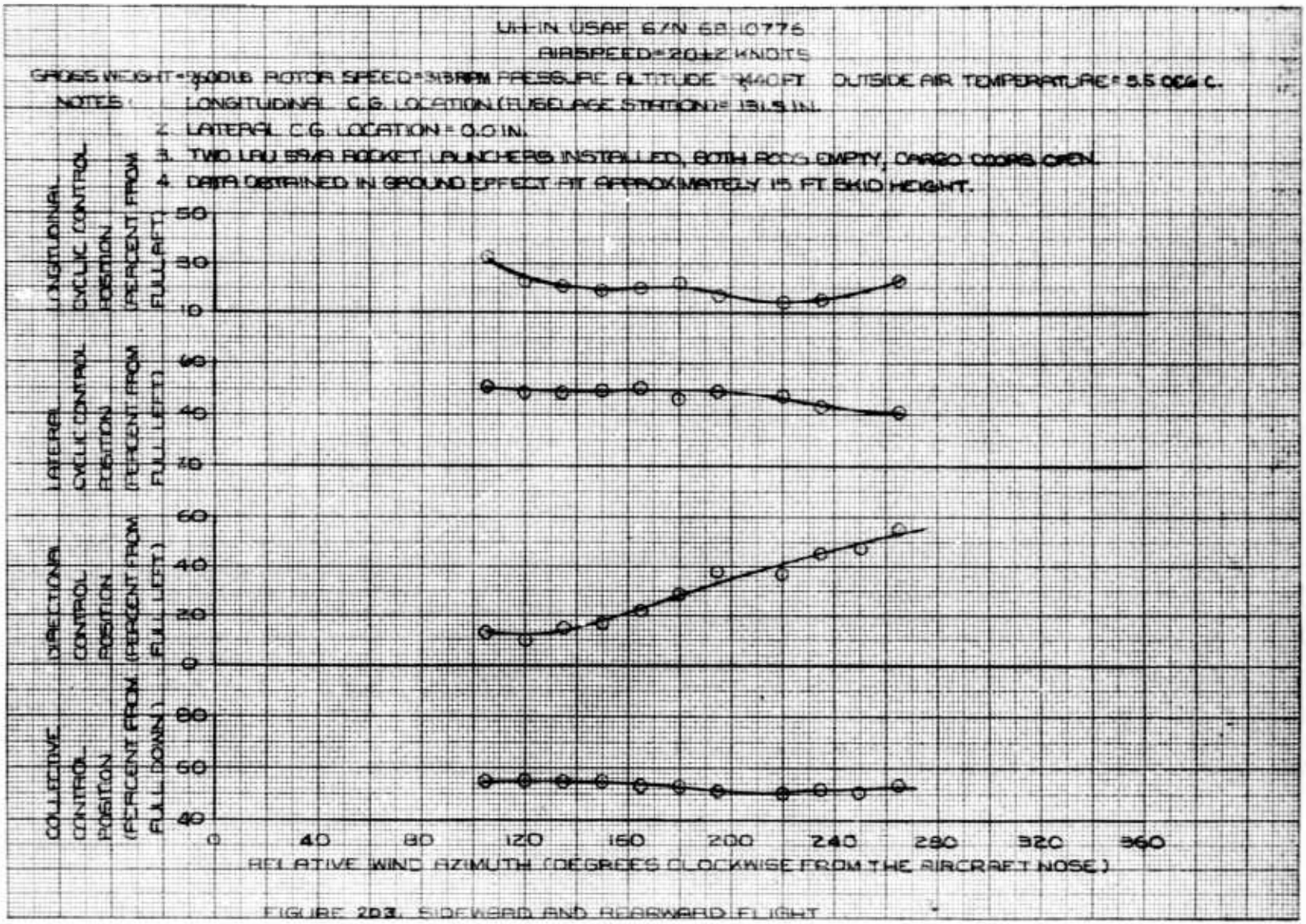


FIGURE 203. SIDEWARD AND REARWARD FLIGHT

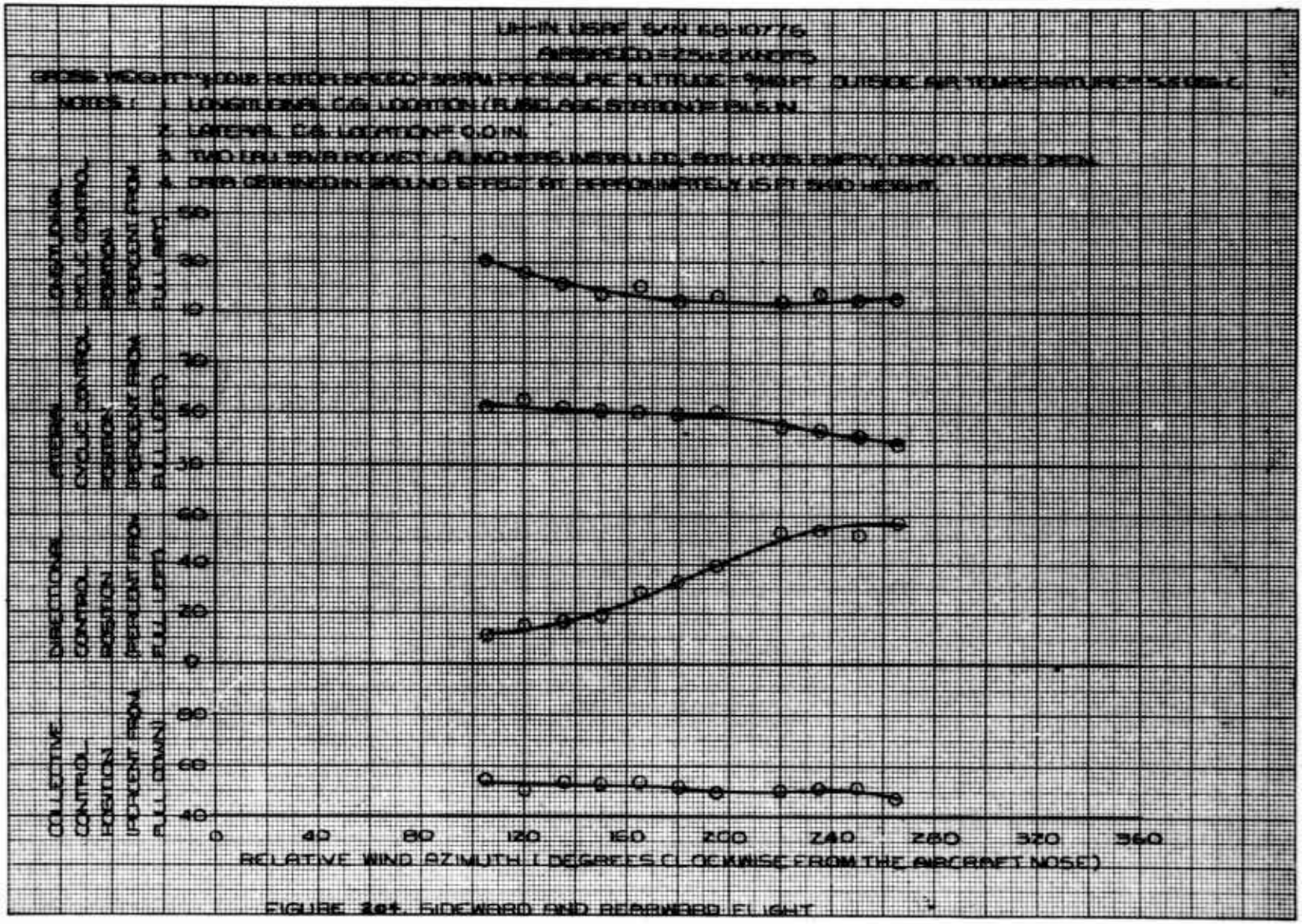


FIGURE 201. SIDEWARD AND REARWARD FLIGHT

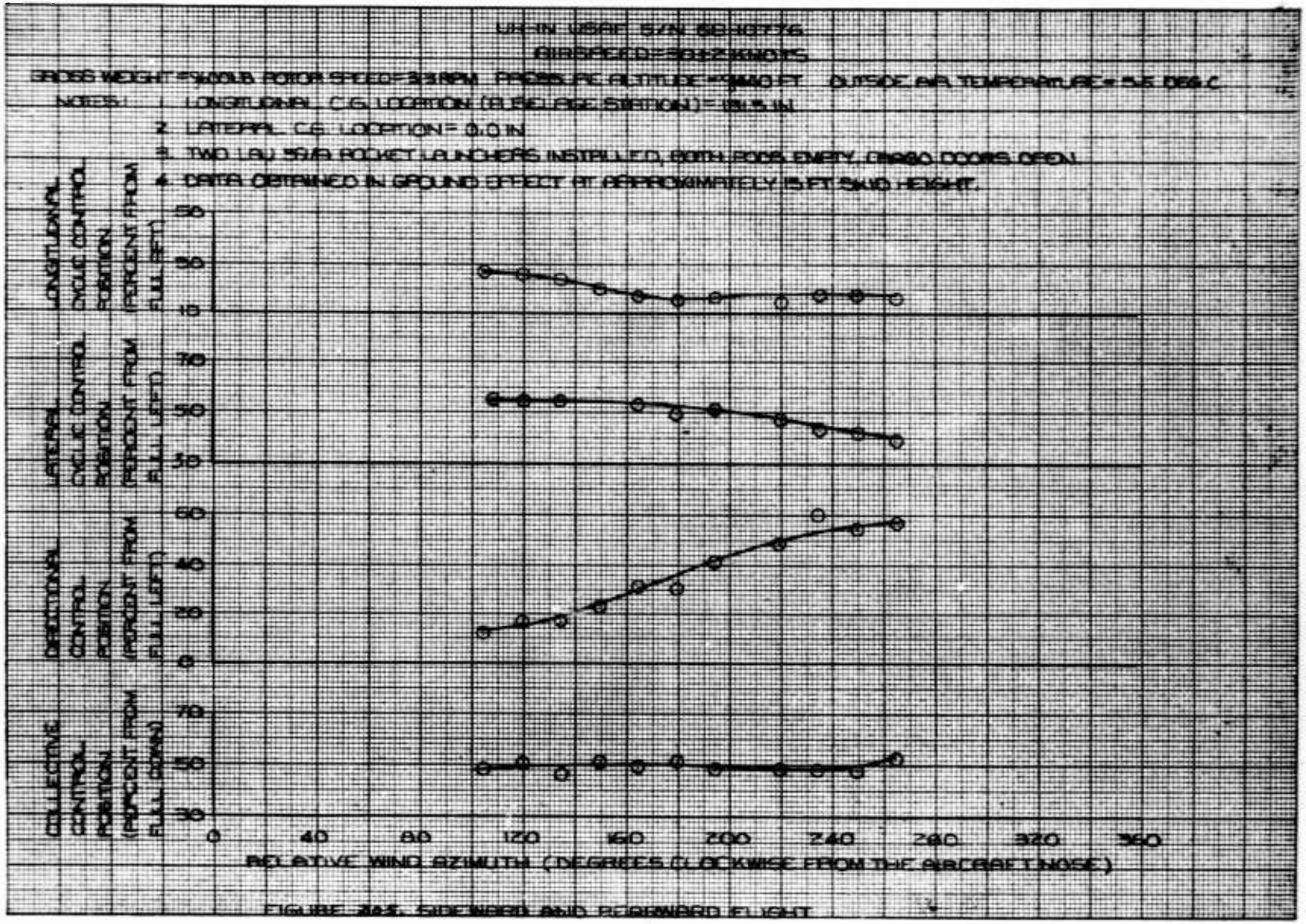


FIGURE 3A5. SIDEWARD AND REARWARD FLIGHT

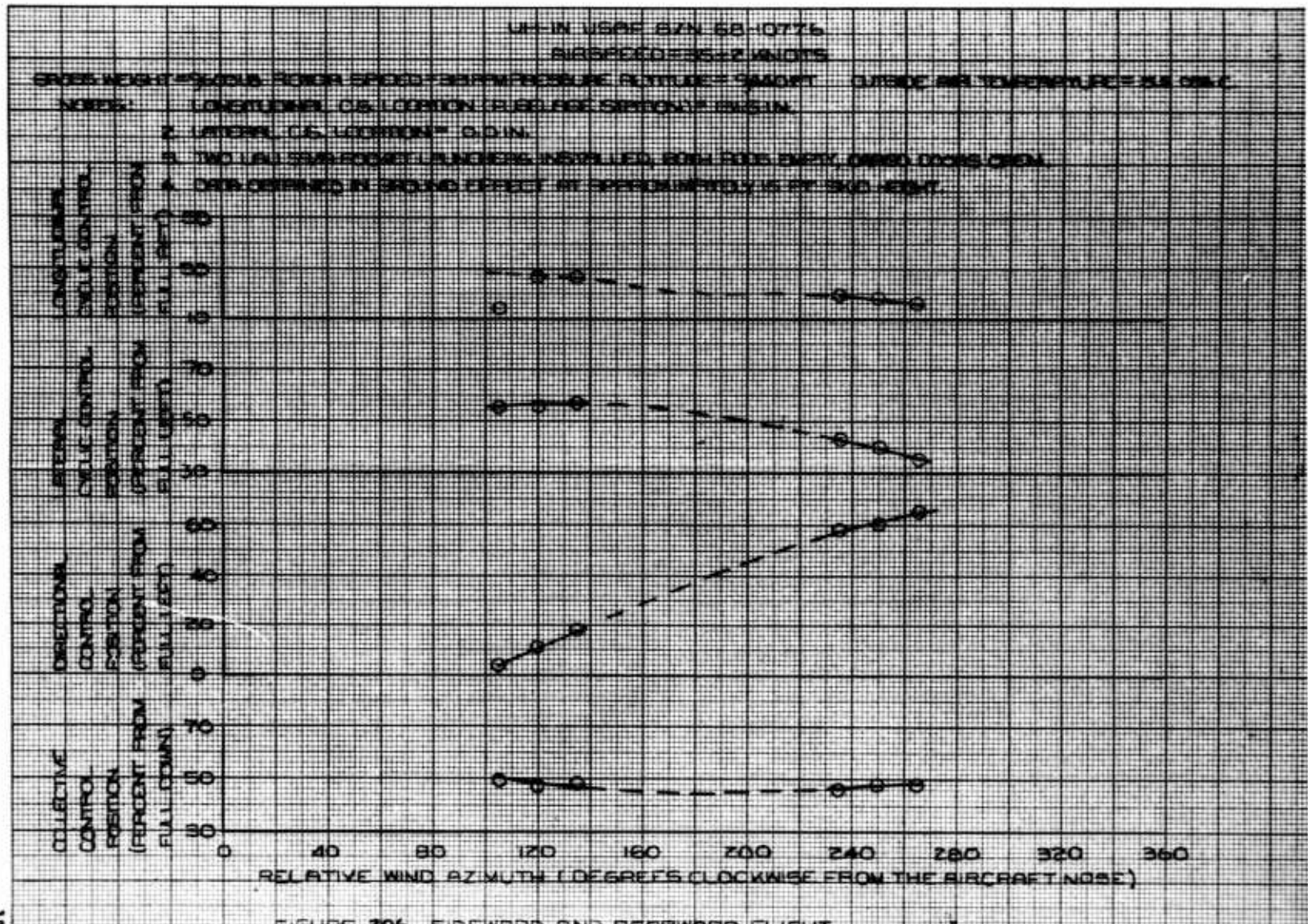


FIGURE 206. SIDEWARD AND REARWARD FLIGHT

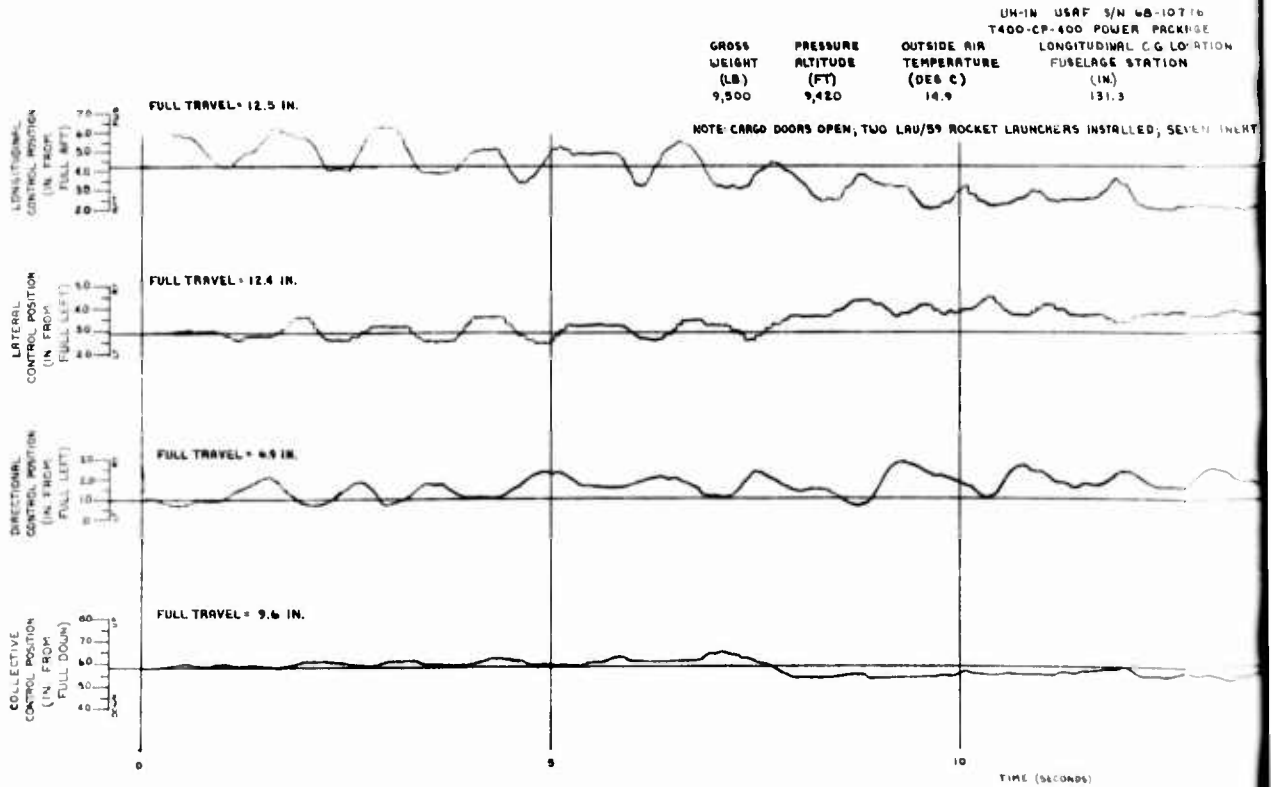
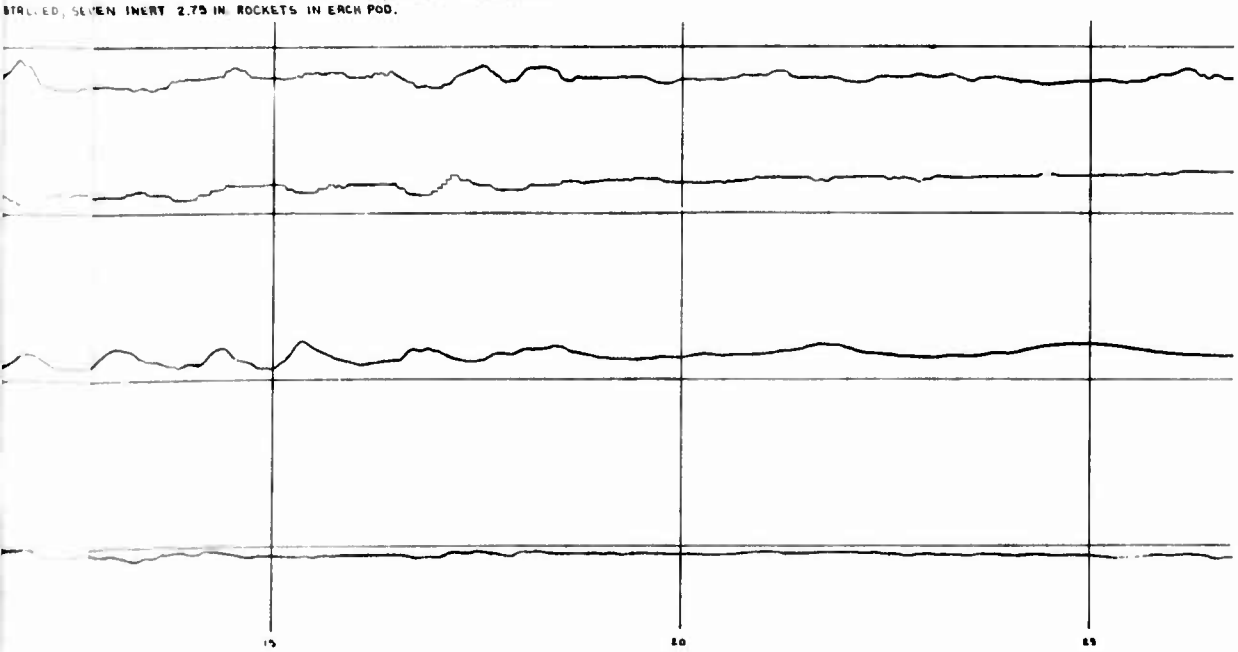


FIGURE 207 PILOT WORKLOAD IN REARWARD [illegible]

S/N 68-10776
POWER PACKAGE

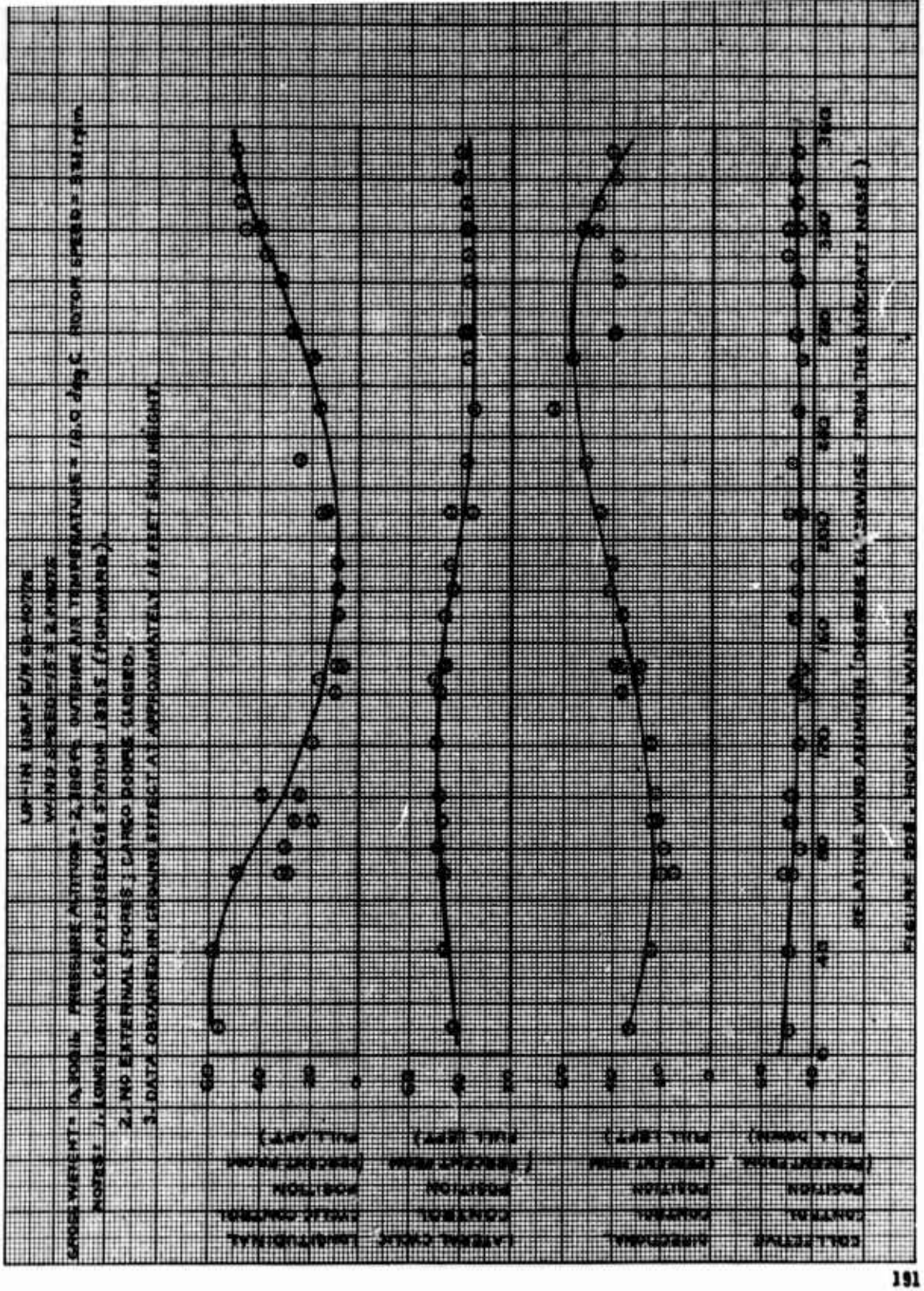
INAL C.G. LOCATION	ROTOR SPEED	AIRSPEED	FLIGHT CONDITION	LATERAL C.G. LOCATION
GE STATION	(RPM)	(KCAS)		
IN)	321	0 TO 35	REARWARD (15 FOOT SKID HEIGHT)	2.9 IN. RIGHT OF AIRCRAFT CENTERLINE
1.3				

STALLED, SEVEN INERT 2.75 IN. ROCKETS IN EACH POD.



PROPULSIVE FLIGHT

12



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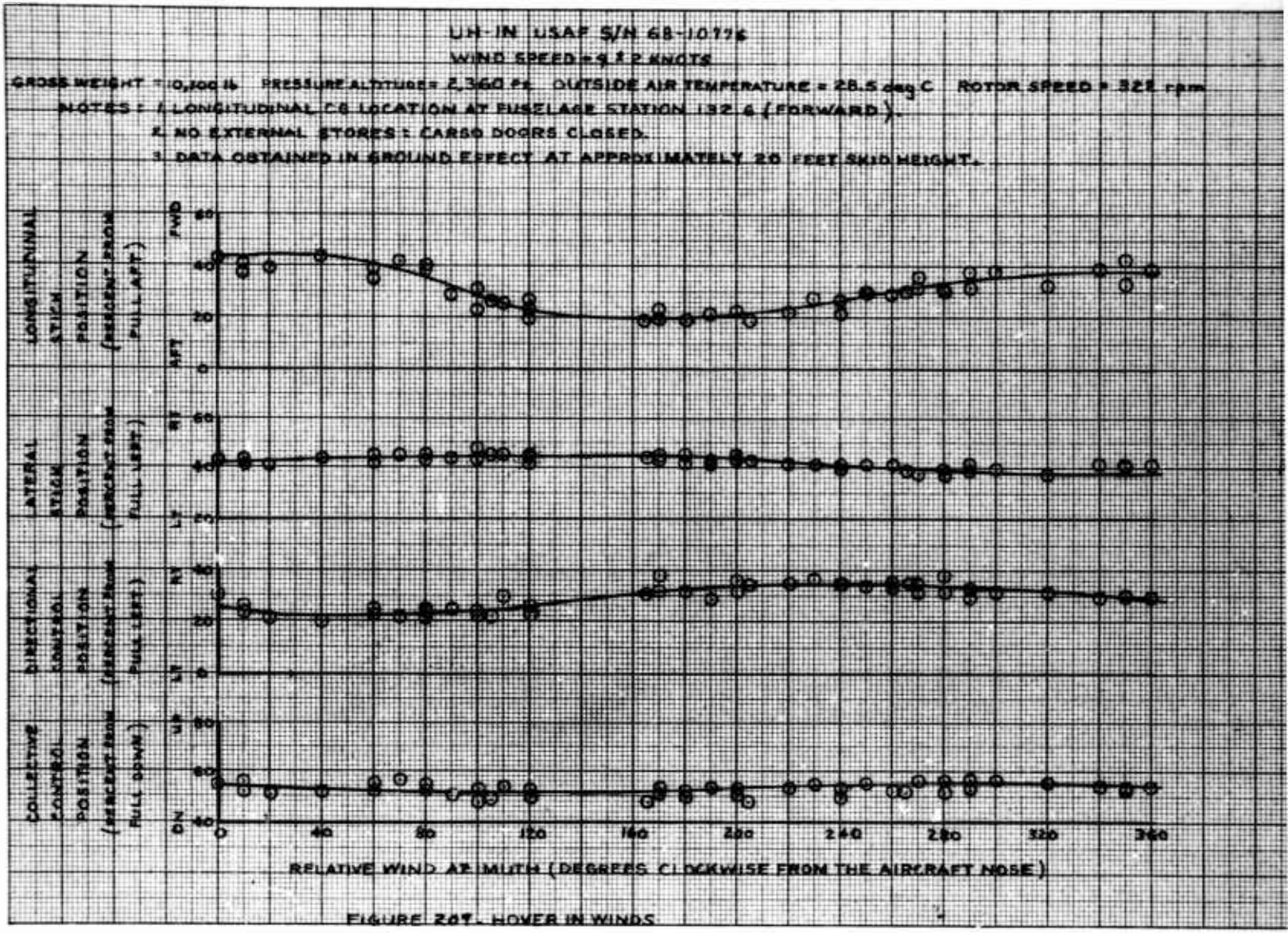


FIGURE 207. HOVER IN WINDS

APPENDIX II
Test Instrumentation

Test instrumentation supplied by AFFTC was installed by Bell Helicopter Company (BHC) of Fort Worth, Texas, in accordance with AFFTC drawings. Initial calibrations were accomplished by BHC with subsequent calibrations, modifications, and maintenance being accomplished by AFFTC. The basic instrumentation package consisted of a CEC 5-119-P3-5 50-channel oscillograph, a photorecorder, a time correlation system and associated sensors and wiring.

INSTRUMENTATION LIST

Instrument	Calibration Range
Photorecorder	
Airspeed - Standard Ship System	15 to 140 kt
Airspeed - Noseboom System	15 to 140 kt
Altitude - Standard Ship System	-500 to +26,000 ft
Altitude - Noseboom System	-500 to +26,000 ft
Compressor Inlet Pressure - Power Section No. 1	-500 to +26,000 ft
Compressor Inlet Pressure - Power Section No. 2	-500 to +26,000 ft
Compressor Inlet Temperature - Power Section No. 1	-50 to +130 deg C
Compressor Inlet Temperature - Power Section No. 2	-50 to +130 deg C
Inter-Turbine Temperature - Power Section No. 1	50 to 1,200 deg C
Inter-Turbine Temperature - Power Section No. 2	50 to 1,200 deg C
Gas Generator Speed - Power Section No. 1	0 to 4,600 rpm
Gas Generator Speed - Power Section No. 2	0 to 4,600 rpm
Power Turbine Speed - Power Section No. 1	0 to 4,650 rpm
Power Turbine Speed - Power Section No. 2	0 to 4,650 rpm
Main Rotor Speed	280 to 340 rpm
Fuel Temperature - Power Section No. 1	-55 to +224 deg C
Fuel Temperature - Power Section No. 2	-55 to +224 deg C
Compressor Bleed Air Temperature - Power Section No. 1	0 to 290 deg C
Compressor Bleed Air Temperature - Power Section No. 2	0 to 300 deg C
Output Torque - Power Section No. 1	0 to 140 psi
Output Torque - Power Section No. 2	0 to 140 psi
Normal Load Factor	-1.5 to 4.0 g's
Outside Air Temperature (Noseboom Sensor)	-50 to +90 deg C
Angle of Sideslip (Noseboom)	45 deg lt to 45 deg rt
Angle of Attack (Noseboom)	45 deg dn to 45 deg up

Oscillograph

Longitudinal Cyclic Control Force	±30 lb
Lateral Cyclic Control Force	+83/-85 lb
Collective Control Force	+30 lb (pull/push)
Directional Control Force	+24/-22 lb
Directional Control Position	30.5 deg/6.9 in.
Collective Control Position	26.0 deg/9.6 in.
Lateral Cyclic Control Position	29.5 deg/12.4 in.
Longitudinal Cyclic Control Position	29.5 deg/12.5 in.
Angle of Sideslip (Noseboom)	±45 deg
Angle of Attack (Noseboom)	±45 deg
Normal Load Factor	+5/-2 g's
Vertical Vibration at Acft cg	0-5 $\frac{\text{Single Amplitude}}{g}$, 0 to 36 Hz
Lateral Vibration at Acft cg	
Angle of Yaw	±120 deg
Roll Rate	±75 deg/sec
Throttle Position - Power Section No. 1	0 to 100 pct
Throttle Position - Power Section No. 2	0 to 100 pct
Pitch Rate	±75 deg/sec
Yaw Rate	±75 deg/sec
Yaw Angular Acceleration	±75 deg/sec^2
Roll Angular Acceleration	±75 deg/sec^2
Pitch Angular Acceleration	±75/deg/sec^2
Main Rotor Shaft Torque	0 to 20,000 ft-lb
Main Rotor Pitch Link Load	0 to 2,000 lb
Angle of Pitch	±80 deg
Tail Rotor Shaft Torque	0 to 1,400 ft-lb
Bank Angle	±80 deg
Load Cell Tension	0 -5,000 lb
Lateral Vibration at Pilot's Seat	0-5 $\frac{\text{Single Amplitude}}{g}$, 0 to 35 Hz
Vertical Vibration at Pilot's Seat	
Bridge Voltage	±100 volts
Event Marker	
Fuel Flow - Power Section No. 1	counts (tenth of a gallon)
Fuel Flow - Power Section No. 2	

Pilot's Station

Airspeed (Noseboom)	15 to 140 kt
Main Rotor Speed	280 to 340 rpm
Altitude (Noseboom System)	-500 to 26,000 ft
Rate of Climb	0 to 3,500 ft/min
Normal Load Factor	-1.5 to +4.0 g's
Angle of Sideslip (Noseboom)	+45 deg
Angle of Attack (Noseboom)	+45 deg

Copilot's Station

Airspeed (Noseboom)	15 to 140 kt
Airspeed (Standard Ship System)	15 to 140 kt
Altitude (Noseboom)	-500 to 26,000 ft
Altitude (Standard Ship System)	-500 to 26,000 ft
Main Rotor Speed	280 to 340 rpm
Outside Air Temperature	-50 to +100 deg C
Correlation Counter	---
Load Cell Tension	0 to 5,000 lb

Instrumentation Control Panel

Stepper Motor Timers
Fuel Control Unit Bleed Line Shutoff Valve Switch
Pitch/Roll/Yaw Attitude Gyro Uncaging Switches
Instrumentation Power Supply Switches
Camera Operating Switch
Oscillograph Operating Switch
Event Button
Fuel Used Counters

APPENDIX III
Aircraft Description

The UH-1N helicopter had a single two-bladed lifting rotor and a two-bladed tractor anti-torque (tail) rotor instead of the more conventional pusher anti-torque rotor. The basic airframe was a UH-1D fuselage with a modified nose section and fuselage alterations to accommodate the twin-engine package. Main rotor blades were "thin tip" blades; the basic NACA 0012 airfoil was modified by introducing a linear taper in thickness from a 12-percent airfoil section at the 80-percent span point to a 6-percent airfoil section at the blade tip, and by then attaching a 2-3/8-inch chordwise extension to the blade trailing edge. Tail rotor blades were also of the "thin tip" design, but without the trailing edge extension.

The aircraft was powered by a United Aircraft of Canada Limited T400-CP-400 power package consisting of two PT6T free-turbine turboshaft engines, each with an uninstalled rating of 900 shaft horsepower at sea level, standard day conditions. The power sections were coupled to a combining gearbox which had a single output shaft to drive the uprated (1,250 shaft horsepower) main transmission. Overrunning clutches in the two drives of the power sections permitted torque to be transmitted in one direction only, providing for single-engine operation and two-engine-out autorotation. An automatic torque matching unit provided for balanced load sharing between the two power sections. The torque matching unit received oil pressure signals from each power section proportional to the torque output of that engine. Equalization of engine output torques was achieved by comparing the two torque pressures and then sending an "increase fuel flow" signal to the automatic fuel control unit of the relatively low-torque-output power section. Two completely independent and irreversible control hydraulic boost systems were provided. System 1 supplied boost pressure to the cyclic, directional, and collective controls while System 2 provided hydraulic boost pressure to the cyclic and collective controls only. Pressure was supplied by two transmission-driven pumps. Movement of the controls actuated a power cylinder servo valve which admitted pressure to the appropriate boost cylinder.

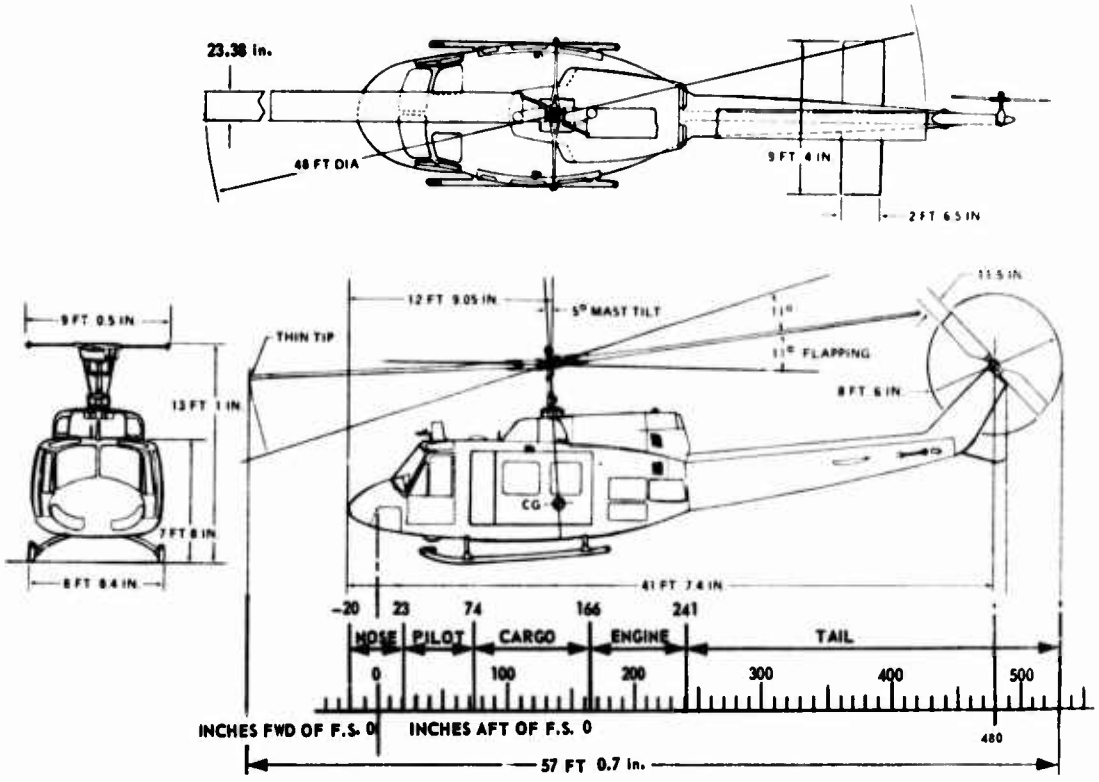
A force trim system was incorporated in the cyclic and directional controls. The system provided a force gradient or "feel" to the cyclic control stick and pedal controls by means of springs and magnetic brake release assemblies.

DIMENSIONS AND DESIGN DATA*

Overall Dimensions

Aircraft length (rotors (turning)	57 ft 0.7 in.
Height (to top of turning tail rotor)	14 ft 4.7 in.
Height (to top of rotor crown)	13 ft 1 in.
Aircraft width (rotors turning)	48 ft
Aircraft width (rotors stopped parallel to fuselage)	9 ft 4 in.
Skid width	8 ft 8.4 in.

*Data obtained from reference 2.



Main Rotor	
Number of blades	2
Rotor diameter	48 ft
Rotor disc area (A)	1809.0 sq ft
Blade chord	23.375 in.
Blade airfoil	
Blade root to 80-percent radius	NACA 0012 (modified)
From 80-percent radius blade tapered to	NACA 0006 (modified
Main rotor clearance (ground to tip rotor static against stops)	7 ft 2 in.
Forward tilt of rotor shaft	5 deg

Main Rotor Blades	
Pitch, collective (measured at the 75-percent radius station	0 to +15
Pitch, cyclic (measured at hub yoke)	
Longitudinal	±12 deg
Lateral	±10 deg
Flapping	±11 deg
Preconing angle	2.75 deg
Blade twist (total)	-10 deg
Tail Rotor	
Number of blades	2
Diameter	8 ft 6 in.
Solidity ratio	0.1436
Tail Rotor Blades	
Blade chord (constant)	11.5 in.
Blade twist	0 deg
Hub precone angle	1.5 deg
Airfoil section	NACA 0018 at Sta 12.75 tapering to NACA 0008.27 at Sta. 510.0
Aspect ratio	8.9
Range of flapping	±8 deg
Main Rotor Speeds	
Power on design maximum	324 rpm
Power on design minimum	294 rpm
Power off design maximum	339 rpm
Power off design minimum	294 rpm
Power on or off - limit	356 rpm
Gear Ratios	
Engine power turbine speed to engine output shaft speed	5:1
Main rotor transmission (engine output shaft speed to main rotor speed)	20.37:1
90-degree gearbox	2.59:1
Intermediate gearbox	1:1
Engine output shaft speed to tail rotor speed	3.98:1
Tail rotor speed to main rotor speed	5.122:1

Limit Flight Load Factors	
at 6,600 pounds (basic design gross weight)	
Maneuver loads (g's)	
Positive	3.5
Negative	-0.5
at 10,000 pounds (alternate mission gross weight)	
Positive	2.3
Negative	0.33
Design Maximum Speed	
Level flight	130 KTAS
Sideward flight	35 KTAS
Rearward flight	30 KTAS
Main Transmission Rating	
(at 6,400 rpm output shaft speed)	
Takeoff (5-minute)	1250 SHP
Normal (continuous)	1100 SHP
Weights	
Design gross weight	6,600 lb
Maximum gross weight	10,500 lb
Fuel capacity (test aircraft)	210 gal (1,380 lb)
Test aircraft empty gross weight (serviced with oil, test instrumentation installed, trapped fuel)	6,597 lb
Test aircraft empty cg location (full oil, test instrumentation installed, trapped fuel)	145.0 in. (fuselage station)
Control Riggings	
Collective control full down - Main rotor blade pitch angle at blade root	7.0 deg
Collective control full up - Main rotor blade pitch angle at blade root	21.0 deg
Right pedal full forward - Tail rotor blade pitch angle at blade root	-10.4 deg
Left pedal full forward - Tail rotor blade pitch angle at blade root	21.9 deg

REFERENCES

1. Berger, Donald, Lieutenant Colonel, USAF and Nasal, Timothy P., UH-1N Category II Flying Qualities Evaluation, FTC-TR-71-50, Air Force Flight Test Center, Edwards AFB, California, November 1971.

2. Flight Manual, USAF Series UH-1N Helicopter, T.O. 1H-1(U)N-1, March 1971.

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Edwards AFB, California

13. ABSTRACT
This report contains the test data and test techniques used in arriving at the conclusions and recommendations reported in AFFTC Technical Report FTC-TR-71-50, UH-1N Category II Flying Qualities Evaluation, November 1971

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Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
UH-1N helicopter flying qualities						

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